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## KEY TO ABBREVIATIONS

B M L	—Boston Medical Lib
B R	—Book Review
C	—Correspondence
E	—Editorial
M L N	—Massachusetts Legislative Notes
M M S	—Massachusetts Medico-Legal Society
M T L	—Massachusetts Medical Society
M T L	—Massachusetts Tuberculosis League
P	—Medical Progress
N	—Meeting Notice
R	—Meeting Report
S C	—Miscellany

N	—Notice
N E S S	—New England Surgical Society
N E U A	—New England Branch of the Amer
N E U A	—New England Association
N H M S	—New Hampshire Medical Society
N H M S	—New Hampshire Surgical Club
N H S C	—Nashua Medical Society
N H S M	—Nashua Surgical Club
N M S M	—Nashua Medical Society
O	—Obituary
O S M S	—Original Article
V	—Vermont State Medical Society

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### THE LIMITATIONS OF ENTEROSTOMY AND UNDESIRABLE EFFECTS INCIDENT TO ITS USE\*

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ALTHOUGH a life-saving measure when opportunely employed enterostomy is a procedure by no means devoid of the hazard of undesirable effects. Obviously then the indications for the insertion of a catheter or tube into an obstructed bowel and its maintenance therein should be clear cut and a proper technique used in its performance if the vital interests of the patient are to be conserved.

The limitations and undesirable effects of enterostomy to be considered in this paper are primarily those pertaining to its use in early postoperative obstruction of the small intestine. The citation of three case histories will serve to illustrate certain aspects of the subject. Blood chemical changes are to be omitted.

Enterostomy as a therapeutic measure in treating intestinal obstruction has been in use for more than three decades. During this period as a result of accumulated knowledge and experience in its application many divergent opinions have been expressed concerning its efficacy in indications and limitations, and in some sections of the United States certain eminent surgeons appear to be restricting its field of usefulness. In support of this statement may be mentioned the admirable results of Cheever obtained by abdominal evisceration with operative evacuation of the small intestine. This measure, considered drastic by some of us was resorted to in an attempt to relieve a group of eight patients considered well nigh hopeless because of varied and profound toxic manifestations of peritonitis with intestinal stasis or ileus. Yet there was not a single fatality.

As further evidence of the changing view point in the employment of enterostomy, and in sharp contrast to the inherently dangerous and spectacular method just mentioned, may be cited the simple use of suction siphonage applied to an inlying duodenal catheter. This step has been selected by Wangensteen as his only operative procedure in successfully effecting decompression in nine cases wherein the patients

suffered from acute uncomplicated obstruction, such as is most commonly exhibited by the formation of an adhesion during convalescence from an abdominal operation.

The judicious use of any method of treating obstructive lesions of the intestine necessitates a working knowledge of the structural changes and perverted functions present in such afflictions. It should be recognized in the early hours of obstructive manifestations that the seriousness of the situation to a large degree is dependent upon the morbid anatomic condition underlying the occlusion. Differentiation, if possible should be made of the following:

- (1) Simple mechanical obstruction, i.e. the occlusion at a single point, such as is produced by the plugging of the intestinal lumen with a foreign body or that brought on by enterostenosis or a constricting adhesion; the type of obstruction in which the vascular circulation is but little impaired until relatively late and then largely because of overdistention of the bowel.
- (2) Strangulation obstruction, namely, the occlusion of a definite loop or segment of intestine as in strangulated hernia, volvulus or vascular occlusion in the mesentery, the form of obstruction in which vascular supply is early jeopardized.
- (3) Ileus, or obstruction arising from inhibition of intestinal motility incident to a faulty nervous mechanism, such as occurs in some cases of injured spine, or from toxic paralysis of the neuromuscular mechanism of Auerbach in cases of peritonitis and in other infections.

Experimental and clinical evidence suggests that in bowel obstruction a normal mucosa does not permit a substance lethal in degree, to be absorbed from its content. Overdistention of the bowel comparatively rapid in onset appears to impede the egress of venous blood and thus to result in faulty intestinal nutrition a disturbance which eventuates in mucosal damage, inhibition of peristalsis, and the escape of

\*Read at the Annual Meeting of the New England Surgical Society at Burlington, Vermont, September 7, 1934.

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without opening into the bowel or into the pus-containing cavity. Therefore, just cephalad to the most proximal adherent loop, an enterostomy was performed with a No 16 French catheter according to the method of Witzel. Five days later the patient's bowels moved normally by rectum. On the fourteenth day after enterostomy, twenty seven days after draining the appendiceal abscess, the patient became ambulatory. There was no appreciable leakage at any time at the site of enterostomy. She was dismissed twenty days after the second operation with both incisions essentially healed, and she has since remained in good health, free from hernia for one and a half years.

Reference in this particular instance has already been made to the fact that, after trying, it seemed practically impossible to free the obstructing mechanism, the adherent loops of ileum, without opening into the bowel or into the pus containing cavity. Obviously, had such a mishap culminated, the opportunity for a general peritonitis would have been materially increased.

The emergence of such an undesirable effect as fistulous formation, as related in my third case history, is without doubt less likely to become manifest when enterostomy has been performed according to the method of Witzel, and with the catheter protruding from the abdomen through a stab wound somewhat away from the larger incision when conditions warrant. Yet, it must be confessed that a troublesome fistulous complication has developed in one of my own patients subjected to enterostomy, and that I have witnessed a similar crisis in the routine of an associate. When such a fistula is sufficiently near the upper end of the small intestine, unless the ill effects of secretional loss are competently combated, the escape of gastro-intestinal secretions onto the surface of the abdomen may give rise to manifestations extremely painful to the patient, distressingly exacting for the nurse, and productive of physiologic disturbances that may eventuate in death of the patient unless successfully treated.

**CASE 3** A girl, aged six years, underwent operation for suppurative appendicitis with peritonitis. Six days later unmistakable evidence of intestinal obstruction became manifest. Pelvic abscess was absent as determined by rectal examination. To relieve this acute situation, enterostomy was performed through a low left rectus incision. For a short time the patient became more comfortable and vomiting ceased. The tube drained well. On the sixth day after its insertion, the tissues of the abdominal wall and bowel about the enterostomy tube separated, and the tube freed itself. The opening in the bowel was full three-quarters of an inch long. The outpouring of fluid from the opening constantly bathed the skin of the abdomen. Food taken by mouth likewise made its escape after a few moments. Dressings were changed in rapid succession as gushes of intestinal fluid repeatedly saturated them. In the natural course of events the skin over the greater part of the abdomen became partially digested, weight loss was appalling and dehydration grievous. The urine usually passed involuntarily,

contained a heavy trace of albumin and numerous red blood cells.

Approximately two weeks after enterostomy had been performed, the patient came under my care. She presented a picture of utter misery. Emaciation was so marked that the ribs stood out in bold relief. Four small decubital or trophic ulcers were present on the skin of the back (fig 4). The tongue



FIG 4 View of patient's back showing four decubital ulcers and hideous loss of subcutaneous fat. Almost entire outline of left scapula discernible. Other bony structures protrude.

was dry and the buccolingual membrane in spots was covered with a whitish exudate consistent in appearance with thrush. The greater part of the skin over the abdomen was inflamed, and about the gaping enterostomy incision it had become digested. She was too ill to cry. An attempt to change her position or to administer nourishment met with a brief sickly whine and a grimace at which time, owing to loss of subcutaneous fat, the outline of the orbicularis oris and other facial muscles were plainly discernible. Pus was still being discharged from the appendectomy incision. Evacuation of fecal matter by rectum had not occurred since the operation which was performed two weeks previously. Three blood transfusions had given not more than temporary improvement.

Starvation and dehydration appeared to be the chief obstacles to adequate therapy—yet she refused to take other than a small amount of water. The superficial veins were obliterated by injury from saline infusions and transfusions of blood. The patency of the bowel was determined by injecting saline solution by catheter inserted through the fistula into the lower bowel segment. The administration of a properly constituted liquid diet was then begun by Murphy drip through a Levine tube in nasogastric position. Normal saline was also given by hypodermoclysis. Gauze dressings were omitted from the abdomen. An elliptical disc two by one inches in its greatest dimensions was fashioned from celluloid. Through a perforation in the center of the disc, the small end of a No 16 French catheter was inserted. A small safety pin was placed, like a cotter pin, through the end of the catheter to prevent its withdrawal, and the excess tip of the catheter distal to the pin removed. This oval shaped disc, with catheter attached, was then slipped into the bowel through the fistula and manipulated into place, so that its position blocked to a very large degree the escape of bowel content. The large end of the catheter was passed through the hole of a similar disc which was superimposed loosely against the raw surface of the gaping incision and held there by another safety pin (figs 5 and 6). The partially digested food escaping around the edges of the discs was removed by continuous suction applied to a rubber tube. Stiffness of the rubber tubing thus employed was enhanced by dividing it about one and one-half inches from its lower end and inserting a glass tube about six inches long. The rubber tipped glass tubing with a small amount of slack was suspended over the

patient from the arc of a hoop supported by the bed. By virtue of the inserted glass tubing the suction tube largely stood on its end near the partly occluded fistula in the gaping incision. The upper end of the suction tube was kept from toppling by overhead support (fig 6). The escaping food was

The effectiveness of this mechanical arrangement was attested by the fact that spontaneous daily evacuations of the rectum promptly occurred after being absent for a period of two weeks. Improve-

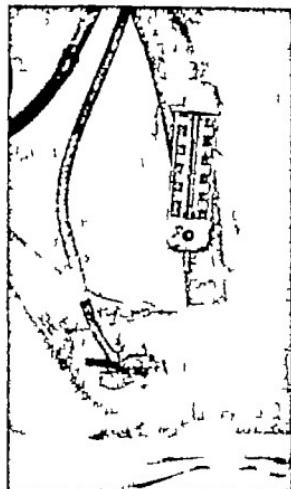


FIG 5. Photograph of appliance attached to patient's abdomen to diminish loss of food and fluid from fistula, also to permit healing of inflamed skin of abdomen. Over the cecal area the unhealed appendectomy incision is barely visible.

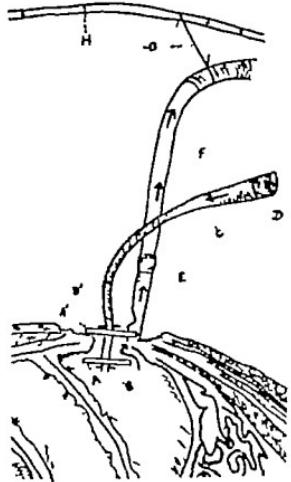


FIG 6. Diagram of apparatus, and cross section of abdominal wall and underlying gut through the fistula, illustrating figure 5. A, inner elliptical disc; B, outer elliptical celluloid disc; C, catheter inserted through disc and held therein by safety-pins; D, cork stopper in end of catheter; E, rubber tubing with opening in its side near its lower end; F, section of glass tubing; G, thread supporting suction tube; H, boot in arc of hoop over patient.

thus removed promptly and automatically by suction into an attached bottle. When two or three ounces of intestinal content had been collected by suction they were reintroduced by gravity into the bowel by way of the catheter held in the center of the celluloid discs.



FIG 7. Photograph of patient shown in figure 6 after increase in weight and diminution of area of excoriated skin about fistula. Out r also removed, inner disc held in position by traction of rubber thread tied to catheter protruding from inner disc.

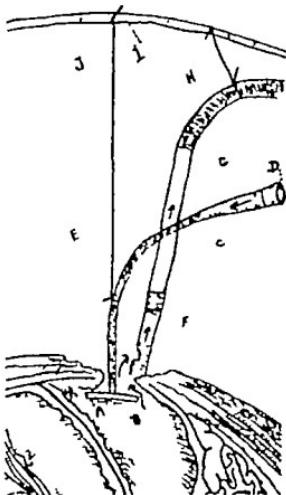


FIG 8. Diagram of apparatus and cross section of abdominal wall and underlying gut through fistula, illustrating figure 7. A, inner elliptical disc; B, safety-pin; C, catheter; D, cork stopped in end of catheter; E, rubber thread; F, rubber tubing with opening in its side near its lower end; G, section of glass tubing; H, thread supporting section tube; I, arc of hoop over patient.

ment in the general appearance of the patient was noticeable within forty-eight hours after instituting these measures to check the loss of nourishment. The desire for food gradually returned. The first solid food voluntarily taken was entirely foreign to the pediatrician's idea of a proper dietary even for healthy children. It consisted of mashed potato fairly well saturated with thick, greasy gravy. The

second article was a small chunk of American cheese. Two or three days later, at the patient's request, a small piece of mince pie was permitted. Strangely enough, these foods appeared to be well tolerated. Forced feeding by the Levine tube was now discontinued twelve days after its inception, and she soon became cooperative in the taking of a rational diet.

Coincident with the improvement of the patient's general condition, there was healing of the partially digested skin and tissues about the enterostomy and appendectomy incisions. With the eroded area of tissues diminished to that covered by the outer disc, the latter was removed to facilitate further healing (figs. 7 and 8). The inner disc was held in place by the upward pull of a somewhat delicate rubber thread made by opening a rubber band. The patient continued to gain weight, and the skin healed to within approximately one-quarter of an inch of the fistulous opening.

Within four weeks after the foregoing measures were instituted, the fistula had become so small and the superficial tissues so well healed that the stoma was blocked by the two button method and the patient was dismissed from the hospital. After an ambulatory period of eight weeks at home, the patient was again hospitalized, the buttons removed and a successful extra peritoneal closure of the fistula made without difficulty. She has remained well two years and ten months, and the abdomen presents neither incisional bulging nor hernia.

Contrary to reasonable expectation release of the disc did not result from sloughing of tissues about the margin of the stoma. Tension maintained by the rubber thread was just enough to hold the disc in position after the taking of food. For short periods during the day and for longer periods at night, after the stomach had emptied, adjustment of the thread was such that it exerted very little tension. Whether the peristaltic contractions of the bowel sufficiently altered the degree of upward pressure exerted by the elliptical disc on the mucosa to prevent its ischemia and sloughing, or whether the mucosa in contact with the periphery of the disc disappeared, was not determined. Although illogical in principle, it is certain that the position of the disc was maintained by this means for fifteen days.

In terminating my remarks, it may be said that certain innovations introduced in the past two years for the treatment of obstruction of the small bowel have been briefly reviewed, and that fistulous formation incident to the use of enterostomy has been stressed as its most undesirable effect. When such a serious complication arises in the treatment of a surgical condition, it has been suggested that some procedure other than the routine can in certain instances be devised to influence most favorably that which at first appears utterly hopeless.

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#### DISCUSSION

DR EDWARD H RIBBLEY, Waterville, Maine Dr Webber's paper brings up a most important subject for discussion. From what one reads in the literature of poor results and from what one sees in consultation work, it is rather evident that enterostomy is being rather indiscriminately used in postoperative complications and that an evaluation of its uses is desirable. I will attempt to give these briefly, as I see them.

#### Contraindications,

- 1 In general peritonitis with paralyzed intestine, absence of peristalsis defeats the purpose of the enterostomy. It is certainly not indicated as a last resort procedure in general peritonitis as it is so often employed.
- 2 In adynamic or paralytic ileus, it has no indications, for essentially the same reasons as in general peritonitis. Ileus is best treated by external heat, either dry or moist, by irritative enemata, the judicious use of pituitrin, the use of the indwelling duodenal tube and maintenance of water balance.
- 3 It is not indicated in high small intestine obstruction, unless the cause of the obstruction is removed at the same time. For an enterostomy above the obstruction will only empty the contents of a small section of high bowel and the loss of chlorides and fluids is so rapid that the patient quickly succumbs in spite of all attempts at replacement.

Lower in the small intestine, in the region of the terminal ileum, however, the loss of chlorides and fluids is not so rapid and here enterostomy is often of greatest value.

#### Indications,

Enterostomy is of great value in the acute obstruction complicating acute salpingitis, pelvic abscess and peritonitis. It tides the patient over the acute stage and avoids operation at a most unfavorable time. It is often of great value after relief of obstruction due to strangulation, whether resection has or has not been done. The boggy, edematous, sluggish intestine needs assistance and enterostomy above such an area is often of great service.

These are fairly clean cut indications for and against the use of enterostomy, and if the surgeon were always careful to make sure that he had a positive indication or contraindication, enterostomy would soon be confined to a certain definite, limited place in the relief of postoperative complications, of extreme value where indicated—as source of definite distress and danger when not indicated.

Dr Webber has spoken of the value of the indwelling duodenal tube. I should like to emphasize its value still further for it seems to me that here is a little instrument of greatest value, the indications for the use of which are constantly widening.

Looking back over past years I wonder how we ever tided over many of our postoperative compli-

ied by contrasting their occurrence in the twenty-five cases progressing to cancer, with their occurrence in the 223 others that did not develop malignancy.

Twelve of the twenty-five cancer patients died, this group represents the failures in the treatment of the 248 cases of premalignant disease. The records of these twenty-five cases have been analyzed to emphasize the significant cause or causes in each for the fatal result compared with the good result.

## SIGNIFICANCE OF ETIOLOGICAL FACTORS

The factors that are widely recognized as of etiological importance in the cause of both premalignant disease and cancer of the mouth or lip are age, sex, syphilis, the use of tobacco, and poor dental hygiene. The following table shows that no significant differences appear when the occurrence of these factors among the cases that developed cancer is compared with their occurrence in the rest of the cases.

TABLE 1

## OCCURRENCE OF ETIOLOGICAL FACTORS IN 248 CASES OF PREMALIGNANCY

Factors	No Cancer— 223 Cases	Cancer— 25 Cases
Age	54 years	60 years
Sex—Males	91%	96%
Syphilis	6%	4%
Use of Tobacco	94%	85%
Bad Dental Hygiene	92%	80%

These etiological factors, therefore, are of no value in predicting whether a case of premalignant disease is likely to develop cancer.

## SIGNIFICANCE OF LOCATION, DURATION AND EXTENT OF PREMALIGNANT DISEASE TO CANCER DEVELOP- MENT

*Location.* In the present series there were fifty-three cases of leukoplakia of the inside of the mouth, including lesions on the tongue, the palate, or the floor, and inside the cheeks. The remaining 195 patients showed leukoplakia or keratosis involving the lips only. In table 2, the incidence of cancer in leukoplakia inside the mouth is seen to be twice as great as that in premalignant lesions of the lips only.

TABLE 2

**LOCATION OF PREMALIGNANCY AND CANCER INCIDENCE—  
248 CASES**

Location	Total Cases	Cancer Cases
Lips only	195	15 — 8%
Inside the Mouth	53	10 — 19%

This tends to confirm the clinical impression that leukoplakias inside the mouth respond less readily to treatment and are more apt to show

obstinate persistence than similar lesions confined to the lips

*Duration* Duration of the premalignant lesion before treatment in the clinic, does not seem to have any relation in this study to the development of malignancy. When the whole series of cases is divided into groups according to duration of their disease before entry to this hospital, no correlation can be found between the more chronic groups and the incidence of cancer<sup>1</sup>. The twenty-five patients that developed cancer averaged one year and seven months from onset of premalignant disease to first treatment in the clinic, the rest averaged one year and eleven months for the same interval. The cancer patients as a group, then, showed no greater neglect of their premalignant condition before applying for treatment.

*Extent* In 216 of the 248 cases it was possible to classify the premalignant lesions from the data in the records relating to their size or extent. Multiple, diffusely scattered leukoplakias involving individually but small areas of buccal mucosa, are included in the "large" or more extensive group of cases. Table 3 shows the incidence of cancer in relation to size of leukoplakia or keratosis.

TABLE 3

**EXTENT OF PREMALIGNANCY AND CANCER INCIDENCE—  
216 CASES**

Size of Lesion	Total Cases	Cancer Cases	
Small 0.1-0.5 cm	65	1 —	2%
Medium 0.6-2 cm	80	8 —	10%
Large 2.1 cm	71	16 —	22%

An appreciable increase in cancer incidence is found in premalignant lesions of greatest extent at the time of the first clinic examination.

## **FACTORS OF IMPORTANCE IN THE END-RESULTS OF THE CANCER CASES**

Theoretically, of any group of cases treated by a cancer hospital, those that are seen before cancer begins, and constantly during the treatment, should give the actual cancer as many as twelve shon: prove for  
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cations without it. In the first place it gives such immediate and generally permanent relief to the patient and relieves the surgeon of the arduous labor of having to pass the old fashioned stomach tube at frequent intervals. These two advantages alone make it worth while.

#### Indications

- 1 In practically all cases of prolonged nausea and vomiting from whatever cause
- 2 In all cases of suspected acute postoperative dilatation of the stomach
- 3 In adynamic ileus and especially in cases of suspected postoperative obstruction. It is a well recognized fact that obstructions may be segmental at first, as when a loop of intestine lies adjacent to an inflammatory area and that if this intestine can be decompressed before further congestion and paroxysms take place, complete obstruction may be aborted and the patient saved from the often fatal secondary operation for complete obstruction. In such cases the early use of the duodenal tube and the administration of adequate amounts of fluids and chlorides are life-saving procedures. It is in such cases that the duodenal tube has its greatest value.

Lately we have found several cases with postoperative nausea and vomiting and hiccuping in which this latter troublesome symptom was immediately relieved by the duodenal tube.

Dr. ALBERT A. BARROWS Providence R. I. On hearing Dr. Webber's very interesting carefully prepared paper and reviewing the recent literature on the values and also some of the disadvantages of enterostomy certain things stand out quite distinctly.

No one will question the fact that in certain cases enterostomy may be a life-saving procedure. Few will question the value of temporary drainage by means of a Levine tube. No one probably believes

that an enterostomy is of any value in cases of general peritonitis and no one will deny that such a procedure may be of inestimable value as a preliminary to operation for obstructing tumors of the large bowel and other intestinal obstructions even severely toxic cases mechanically obstructed.

These observations have been interestingly borne out by a review of about forty cases in which an enterostomy was done at our hospital between the years of 1929 and 1933.

I feel sure that I must have missed a good many cases of enterostomy that were done. However after a review of these cases and a tabulation of our results, I was immediately impressed with the striking similarity between the results that we obtained and the results which led to the observations I have just read.

Of this series approximately one-third were cases of paralytic ileus and general peritonitis, in which the enterostomy was done as a last resort, cases which Dr. Risley has called to your attention, in which it is of no value whatsoever. All these cases died.

The second group of cases was a little group of six in which enterostomies were done for acute obstructions in which there was either no peritonitis or in which the peritonitis was of definitely local character. Of these six cases four recovered, a fifth had apparently recovered from his obstruction but died from an acute cardiac condition at about the tenth day. The sixth case died from shock, from resection of about seven feet of bowel, the operator apparently feeling at the time that the resection was necessary.

The remaining cases of this series consisted of obstructions partial or complete, from tumors usually carcinoma of the large bowel in which an enterostomy was done. Recovery took place in a little less than half of these cases and in this series I had to include one case in which the tube was accidentally withdrawn by the patient and a peritonitis followed and death.

I believe that enterostomy will continue to have a very valuable place in emergencies and should not be overlooked and that it may act to prevent the surgeon from attempting too much at an inopportune time.

## LEUKOPLAKIA BUCCALIS AND CANCER\*

BY SOMERS H. STURGIS, M.D. † AND CHARLES C. LUND, M.D. †

#### INTRODUCTION

THE end results in 248 selected cases of leukoplakia and keratoses of the mouth or lip entering the Collis P. Huntington Memorial Hospital during the years 1918-1926 have been previously reported.<sup>1</sup> These cases showed no malignant disease upon entry, and were observed for a period of five years or more. It was calculated from Massachusetts Death Rates for males from 1920-1930, that, in such a group, but one death from buccal cancer might be expected on the basis of chance alone. There were actually, however, twelve deaths among the

From the Cancer Commission of Harvard University. This work was made possible by grants from anonymous donors and from the Delamar Mobile Research Fund.

\*Sturgis, Somers H.—Member of Staff Out Patient Department, Cambridge Hospital. Lund, Charles C.—Surgeon, Collis P. Huntington Memorial Hospital. For records and addresses of authors see "This Week's Issue," page 3.

twenty five patients of the series who developed buccal cancer after entry. Considering the statistical method that was used, it is reasonable to conclude that cancer developed at least twelve times more frequently in association with these lesions than might have been expected in any similar group of normal individuals without such lesions.

The present communication is a more detailed study of the twenty five patients that developed malignancy of the mouth or lip while under treatment for precancerous lesions of the same areas. Since these cases were often under observation for a considerable time before the appearance of malignant disease, it was thought that such a study might throw light on the importance of the factors generally considered etiologically significant in the development of buccal carcinoma. These factors have been stud-

ied by contrasting their occurrence in the twenty-five cases progressing to cancer, with their occurrence in the 223 others that did not develop malignancy.

Twelve of the twenty-five cancer patients died, this group represents the failures in the treatment of the 248 cases of premalignant disease. The records of these twenty-five cases have been analyzed to emphasize the significant cause or causes in each for the fatal result compared with the good result.

#### SIGNIFICANCE OF ETIOLOGICAL FACTORS

The factors that are widely recognized as of etiological importance in the cause of both premalignant disease and cancer of the mouth or lip are age, sex, syphilis, the use of tobacco, and poor dental hygiene. The following table shows that no significant differences appear when the occurrence of these factors among the cases that developed cancer is compared with their occurrence in the rest of the cases.

TABLE 1  
OCCURRENCE OF ETIOLOGICAL FACTORS IN 248 CASES OF PREMALIGNANCY

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These etiological factors, therefore, are of no value in predicting whether a case of premalignant disease is likely to develop cancer.

#### SIGNIFICANCE OF LOCATION, DURATION AND EXTENT OF PREMALIGNANT DISEASE TO CANCER DEVELOPMENT

**Location** In the present series there were fifty-three cases of leukoplakia of the inside of the mouth, including lesions on the tongue, the palate, or the floor, and inside the cheeks. The remaining 195 patients showed leukoplakia or keratosis involving the lips only. In table 2 the incidence of cancer in leukoplakia inside the mouth is seen to be twice as great as that in premalignant lesions of the lips only.

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This tends to confirm the clinical impression that leukoplakias inside the mouth respond less readily to treatment and are more apt to show

obstinate persistence than similar lesions found to the lips.

**Duration** Duration of the premalignant lesion before treatment in the clinic was found to have any relation in this series to development of malignancy. When the series of cases is divided into groups according to duration of their disease before admission to the hospital, no correlation can be found between the more chronic groups and those who developed cancer. The twenty-five patients who developed cancer averaged one year and four months from onset of premalignant disease to admission to the clinic, the rest averaging eleven months for the same group of cancer patients as a group, the greater neglect of their premalignant condition before applying for treatment.

**Extent** In 216 of the 248 cases it was possible to classify the premalignant disease from the data in the records relating to extent. Multiple, diffusely scattered leukoplakias involving individually both or more extensive group of cases, is the incidence of cancer in relation to leukoplakia or keratosis.

TABLE 3  
EXTENT OF PREMALIGNANCY AND CANCER  
216 CASES

Size of Lesion	Total Cases
Small 0 to 5 cm	65
Medium 0 to 2 cm	80
Large 2 to 1 cm	71

An appreciable increase in cancer incidence is found in premalignant lesions of greater size at the time of the first clinic examination.

#### FACTORS OF IMPORTANCE IN THE FAILURE OF THE CANCER CASES

Theoretically, of any group of patients seen by a cancer hospital, those that are seen before cancer begins, and observed continuing the treatment of the premalignant disease should give the best results of treatment. As actual cancer develops and is treated as many as twelve out of twenty-five cases that should prove fatal has prompted a search for the factors of possible importance in these failures. Of the twenty-five cases in which cancer developed, fifteen were located on the lips and ten involved the mucous membrane of the mouth. There were six cases in each group. Forty per cent of the cases of carcinoma of the lip and 19 per cent of failure with carcinoma of the mouth gave results no better than those obtained in a series of cases that did not come under observation during the premalignant period.

relationship between the two. In a roundabout way, Strongren links up the pyknlo constitutional type, hypercholesterolemia, arteriosclerosis and arcus senilis, accepting arcus senilis as related to arteriosclerosis. Some present-day psychiatrists mention it as being a sign of cerebral arteriosclerosis. To be a sign significant of any condition, a sign must occur in at least a liberal majority of cases showing that condition. Conversely, if cases not showing the sign have the condition for which the sign is considered significant, then the significance of the sign is lessened or destroyed.

The writer, wishing to determine whether *arcus senilis* bears a definite relation to a num-

**Clinical Arteriosclerosis** Any demonstrable sclerosis, tortuosity or beading of the radial, brachial, temporal or dorsalis pedis arteries

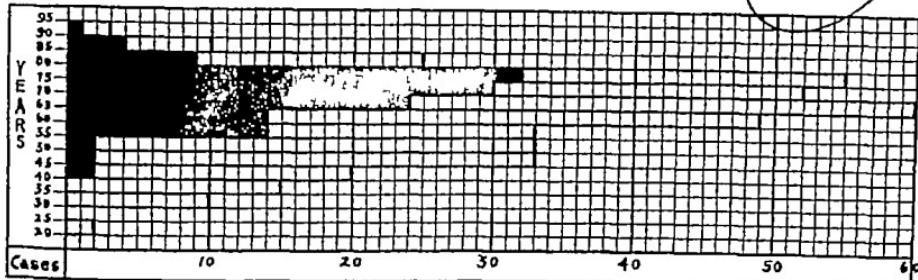
**General Arteriosclerosis** Definite sclerosis  
of coronaries or of the aorta and its larger  
branches or both

**Cerebral Arteriosclerosis:** Definite sclerosis of basal arteries of the brain, of the Circle of Willis or its branches, or microscopic occluding sclerosis of the smaller subdivisions.

**Nephritis** Any case showing the urines of nephritis or postmortem nephritic kidneys.

Hypertension Any case showing above  
150 mm. of mercury

**CHART I**



Total No. Cases

**No Cases with Arcus Senilis**

□ "without"

	3rd	4th	5th	6th	7th	8th	9th	10th
Percentage of Arcus Senilis in each Decade—	0.0	0.0	7.6	24.2	34.9	57.9	77.1	91.2
	6th	and Upward						
"	"	5th	"	"				
"	"	4th	"	"	Below			
"	"	3rd	"	"		5.0		

ber of pathological conditions has taken four hundred cases on which physical examinations, mental examinations, laboratory work, and finally postmortem examinations have been done, and correlated the findings. The postmortem examinations include examination of the brain both microscopically and grossly. The four hundred cases include one hundred and thirty-four cases with *arcus senilis* and two hundred and sixty-six cases without it. The ages of the group range from twenty three to ninety two years inclusive. The cases all suffered from mental aberrations or diseases, and are divided among two hundred and forty-one males and one hundred and fifty nine females. The findings are worked out on a percentage basis.

The pathological conditions considered having a possible relation to arcus senilis —

Of the four hundred cases, one hundred and thirty four showed a positive arcus senilis or 33.5 per cent. Considering the sixth decade as a period when arteriosclerosis begins to lay down demonstrable pathology, 80 per cent of the cases died during or after this decade. Chart 1 shows the age distribution of the four hundred cases as well as the age distribution of the cases showing arcus senilis.

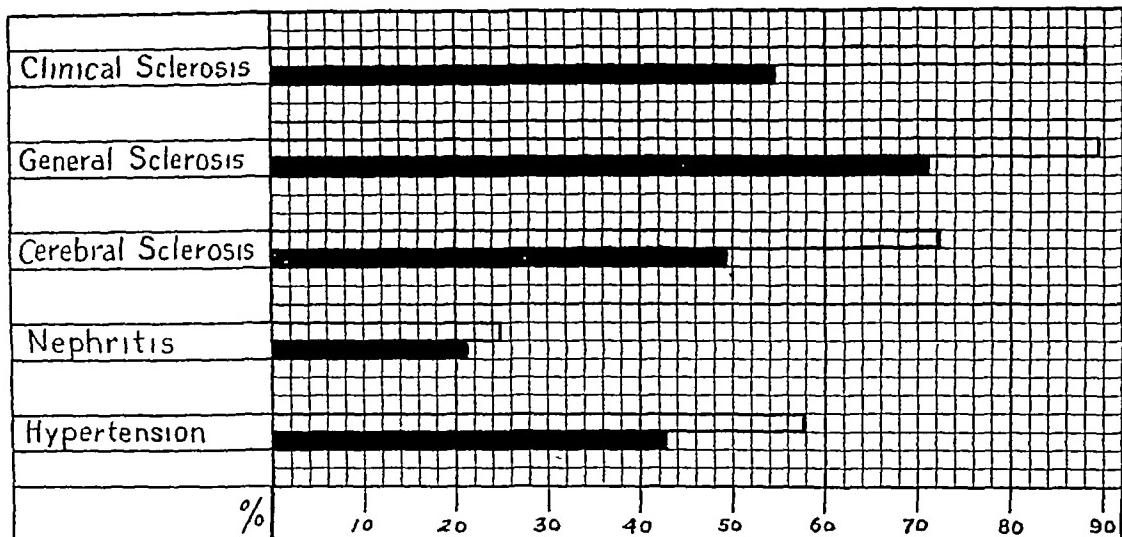
It is obvious that as 59.4 per cent of the cases in the sixth decade and beyond show no arcus senilis, the 40.6 per cent of the cases that do show arcus senilis must be accounted for on a basis other than that of arteriosclerosis.

Similarly with 47.6 per cent of the cases in the eighth decade and beyond showing no area senilis, the 62.4 per cent that do show it must be accounted for on a basis other than that of senility. This being true the 5 per cent of cases below the sixth decade showing area senilis must be accounted for on a basis other than arteriosclerosis or senility.

The pathological conditions being accounted

CHART 2

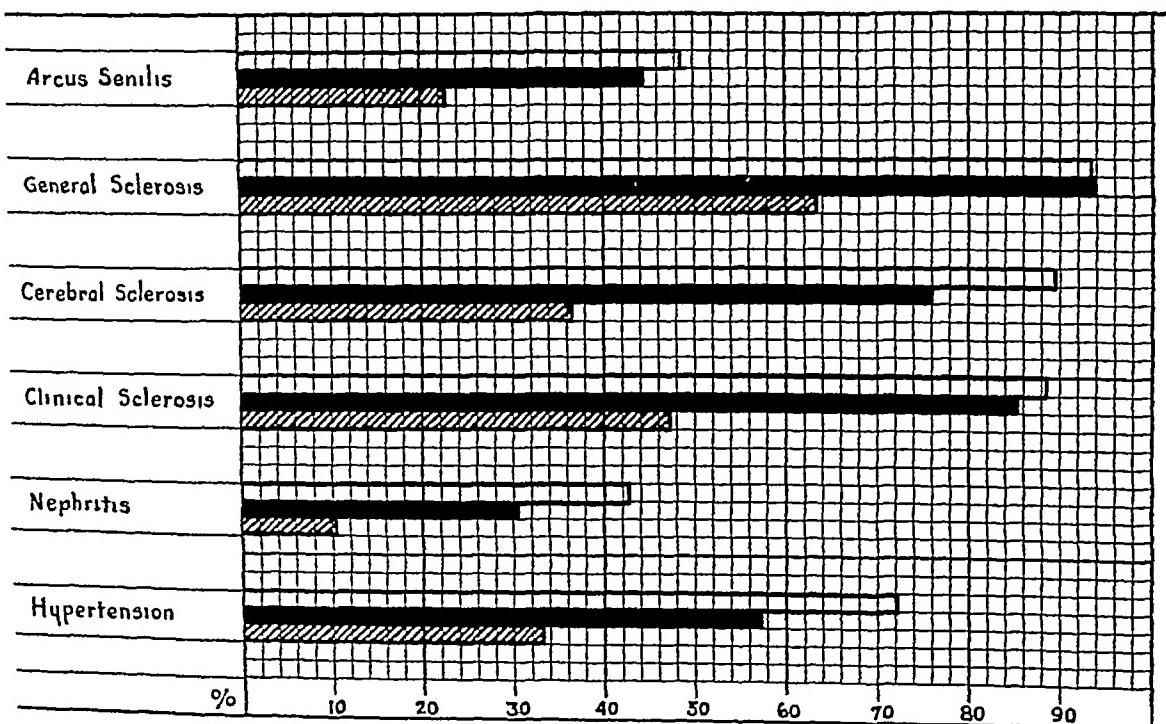
## Arcus Senilis Pos. □ Arcus Senilis Neg. ■



The positive Arcus Senilis starts at 20 years higher than the negative cases

Positive Arcus Senilis margin of	Clinical Sclerosis	33.5%
	General	18.4%
	Cerebral	22.7%
	Nephritis	3.2%
	Hypertension	15.7%

CHART 3

Psychosis c Cerebral Arteriosclerosis □ Senile Psychoses ■  
Other Psychoses △

## Psychoses

## Age at Death

	Youngest	Oldest	Avg.
Psychosis c Cerebral Arteriosclerosis	40	88	69.5
Senile Psychoses	55	91	76.3
Other Psychoses	23	92	56.3

for are also found in cases showing no arcus senilis. In chart 2 a comparison of percentage of occurrence of these conditions is shown in cases with and without arcus senilis.

It must be remembered that in this group the cases with arcus senilis start about twenty years higher than the cases without arcus senilis, therefore, the pathological conditions considered must necessarily show a high incidence in the positive cases because of the age difference. Even then the margin is not great enough to be considered significant.

All of the cases in this group were cases with mental disorder, so that a comparison of the percentage of occurrence of the several pathological conditions in related psychoses is of interest. It will be seen in chart 3 that arcus senilis was present in but 48.5 per cent of the cases diagnosed psychosis with cerebral arteriosclerosis, and in but 44.5 per cent of the cases diagnosed as sénile psychoses. In these two psychoses the pathological conditions that appeared to be related from their frequency of occurrence were general arteriosclerosis cerebral arteriosclerosis, clinical arteriosclerosis, and in lesser degree, hypertension.

Arcus senilis was found to be present in:

Clinical Arteriosclerosis	44.7%
General	38.8%
Cerebral	42.4%
Nephritis	36.7%
Hypertension	40.8%

With arcus senilis occurring in less than 45 per cent of the cases showing any of these pathological conditions, it cannot be considered as a sign of any one of them.

#### CONCLUSIONS

- 1 The term "arcus senilis" does not denote the condition for which it is named, and does not occur in cases having reached the senile age in high enough percentage to be considered a sign of senility.
- 2 Arcus senilis cannot be considered a sign of general arteriosclerosis, cerebral arteriosclerosis nephritis, or hypertension because of the low percentage of its occurrence in cases showing these pathological conditions.

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## MEDICAL PROGRESS

### PROGRESS IN NEUROLOGY IN 1933

BY JULIUS LOMAN, M.D.\*

MANY excellent neurological studies not only on clinical but also on purely anatomico-physiological problems have been reported during the year 1933. The baffling problems presented by epilepsy and migraine continue to receive great physiological consideration productive on the whole of clearer understanding. More and more attention is being given to their aetiologies with interesting results, particularly in the muscular dystrophies and myasthenia gravis, in migraine, in chorea minor in disturbances of the sympathetic nervous system, and in some functional nervous conditions.

#### ANATOMICO-PHYSIOLOGICAL STUDIES

##### Action Currents in the Central Nervous System

For the past year Saul and Davis<sup>1</sup> have been working on the effect of action currents on the central nervous system. As they state, the central nervous system may be thought of as an organization of tracts and centres which transmit and integrate nerve impulses. Nervous and mental diseases may be considered as disorders of such transmission and interplay. Thus, a method for detecting and studying the nerve

impulses in the functioning nerve tissue might throw some light on the workings of the nervous system in health and disease. The authors explain that nerve impulses are invariably associated with electrical disturbances, called action currents. One is never found without the other, they are interchangeable but not proved to be identical. The action current travels at a speed of fifty to one hundred meters a second and derives its energy from the nerve itself.

The technique utilized by the authors is as follows. A stimulus is applied to a sense organ, as a light to an eye. This results in a localized flow of nerve impulses along the appropriate tracts of the central nervous system. Electrodes placed on the proper tracts (for example, the optic tract) detect the action currents. The disturbance thus detected is amplified by electron tubes and recorded on a special recording device. These action currents may then be seen and heard and permanently recorded for later study. The brains are sectioned for anatomic correlation.

The following results were obtained: The observations indicate two distinct electrical phenomena involved in hearing true action currents and "spread." This spread is an electric

Loman, Julius—Instructor in Neurology, Tufts College Medical School. For record and address of author see "This Week's Issue," page 32.

current which seems to originate in the cochlea, which is conducted throughout the tissues of the head at the usual speed of electricity. The action currents are highly localized in the auditory pathways. Musical tones applied to the cat's ear are reproduced in the loud speaker only up to 1000 double vibrations per second, words come back blurred. Again, electrodes may be placed on the optic tract. This preparation is so sensitive that in a diffuse light a foot from the cat's eye the amount of movement necessary to pinch a small forceps stimulates the retina to produce action currents enough in the optic tract to give a definite response on the oscillograph and loud speaker. Olfactory experiments were not conclusive.

### *Cerebral Cortical Localization*

Adrian<sup>2</sup> makes some very interesting remarks on the activity of nerve cells. He stresses that it is upon the total mass of functionally active cortex and not upon its distribution that learning depends. Conversely, the effects of an injury in terms of loss of responses depend upon the amount of gray matter destroyed and not upon the interruption of specific cortical connections. Thus the central nervous system of a mammalian vertebrate is capable of relearning acquired habits that have been lost through experimental destruction of those parts from which these habits are normally localized. These acquired responses of the cortex can nearly all be learned, and nearly all destroyed responses can be relearned in any part of the original or of the residual cortex, respectively.

### *The Dermatomes in Man*

As a result of observations during his long surgical experience, Foerster<sup>3</sup> has been able to define all the dermatomes of the lower extremity, that is, to make an accurate determination of the distribution of the posterior spinal roots in man. To define a dermatome, Foerster utilized two methods, one of which he calls the constructive method. This consists of dividing a series of contiguous roots. The superior border of the resulting anesthesia represents the inferior border of the dermatome, which corresponds to the next higher intact root, whereas the inferior border of the anesthetic area represents the superior border of the next lower dermatome. The second method used by Foerster, first utilized by Strecher and Bayliss on animals, is based on the fact that faradic stimulation of the distal part of a divided posterior root is followed by vasodilation. Foerster reports the following results of his observations:

1. The dermatomes of man overlap to the same degree as do those of the monkey. Foerster has never found that resection of one single root in man was followed by loss of sensitivity as detected by the usual clinical methods.

2. The tactile dermatomes are larger than the pain and thermal dermatomes. Sometimes the resection of two contiguous roots produces analgesia and thermesthesia but no tactile anesthesia.

3. The areas of vasodilation produced by electrical stimulation of the posterior roots are similar but not identical with them. The former are similar to the areas of herpetic eruption.

4. A single dermatome is represented not only in the totality of the corresponding root but in every single filament of the root. When all filaments, except one of each of a number of roots are cut, no anesthesia results, each of the corresponding dermatomes preserves its sensitivity.

### **EPILEPSY**

#### *Etiology*

Probably the most significant study on the pathological physiology of epilepsy this past year is that of Penfield<sup>4</sup>. This author observed the brains of thirty patients during convulsions in whom electrical stimulation in the brain was made on the operating table. Twenty-six of these patients showed striking vascular changes and all but six showed some alteration in cerebral blood vessels or in vascularization as sequel to the attacks. One constant visible phenomenon in the brain during an epileptic seizure, according to Penfield's observations, is cessation of arterial pulsation. Cerebral pallor may be present during the seizure but more often follows it. The epileptic brain is subject to local vasomotor reflexes, such as have never been described in the normal brain. Physiologic instability of the blood vessels seems to be the abnormal state common to epileptics of all varieties.

The vasomotor spasms and changes seen so characteristically in the cerebral cortex of epileptics are due, Penfield states, to vasomotor reflexes, but reflexes which are probably not subserved by autonomic centers placed outside the cranial cavity, for cervical and dorsal sympathectomy should make epilepsy impossible if this were so. This operation, performed by Penfield on four patients, did not abolish seizures. The vascular abnormality, Penfield finally concludes, is thus probably centered in the brain itself.

Lennox<sup>5</sup> emphasizes that the "all or none" conception of etiology is no more true for epilepsy than for other medical conditions. Lennox stresses that the physician must seek not simply a cause but the various causes of seizures. He likens epilepsy to a reservoir of waters, the deepest portion of which is occupied by the patient's susceptibility, a tendency presumably inborn or constant. With this as a basis, there is a periodic overflow of the restraining banks by feeding springs. These springs represent the contributory factors of

epilepsy and include brain lesions, emotional disturbances, sympathetic and somatic abnormalities. By discovering the incoming springs and raising the banks, that is to say, increasing the seizure threshold, the waters are kept below the overflow level.

#### Treatment of Epilepsy

Disagreement regarding the efficacy of restriction of fluid intake in the treatment of epilepsy continues. Fremont Smith and Merritt<sup>8</sup> agree with the negative side taken by Stanley Cobb. The former authors' experiments show that well marked variations in the level of fluid intake in man have no appreciable effect on the cerebrospinal fluid pressure, and further, that the influence of the level of the fluid intake upon the incidence of convulsive seizures is not dependent upon the variations in intracranial pressure.

Fay, however, is still convinced that dehydration, a theory presented five years ago actually produces a decrease in cerebrospinal fluid pressure, when properly maintained, and that regulation of fluid intake can be accomplished only when all the factors, including the diet, are carefully controlled.

Lyon and Dunlop<sup>9</sup> have observed the therapeutic effects of dehydration upon a small series of epileptic patients having seizures every day. During the periods of dehydration, definite beneficial effects were noted in four out of five cases. This improvement compared favorably with that produced by treatment with ketogenic diet, but was not so good as that effected by adequate doses of luminal. The effects of luminal, however, were enhanced by maintaining a state of dehydration.

On the other hand, Fetterman and Kumun<sup>10</sup> treated twenty-one epileptics by dehydration with intakes as low as 100 cc., and yet their results were essentially negative. The change to hydration did not with any regularity precipitate attacks.

In commenting on the results obtained by the above authors Fay remarks that it is dangerous to reduce a patient's fluid to 100 cc. a day. The objective in the dehydration treatment is not to subtract fluid to an intolerable degree, Fay states, but to subtract fluid from the patient's body fluid reservoirs. Unless the patient demonstrates an actual loss of body weight there is no subtraction or real dehydration. Fay outlines a regimen for accomplishing this aim.

#### Treatment of Status Epilepticus

Storchheim<sup>11</sup> obtained very good results in eight cases of status by the use of magnesium sulphate given intravenously. Ten cc. of a twenty-five per cent solution a safe dose was found to terminate most attacks of status epilepticus. If necessary, this dose may be repeated and

possibly a third time in well-developed individuals. Pulmonary edema, occurring in status, is apparently successfully coped with by the same method of therapy.

#### MIGRAINE

##### Etiology

Riley, Brickner, and Kurzrok<sup>12</sup> make a very interesting preliminary report on their hormonal study of migraine. Examination of the urine of eleven female patients during the migrainous attacks showed that the female sex hormone was usually absent, or present in much reduced quantity. Among these patients, a total of twenty-nine headaches occurred during the period of observation. Twenty of the headaches were preceded in their onset by the appearance of prolactin in the urine. Prolactin also appeared in the urine of two male patients. Injection of follitropin caused the appearance of the characteristic attack of migraine in seven out of nine female cases. The authors, therefore, believe that the presence of prolactin in the urine is definitely related to the occurrence of migrainous seizures. They further conclude that these results substantiate the hypothesis that ovarian and presumably hypophyseal activities are closely related to the occurrence of migraine.

A review of migraine is made by Critchley and Ferguson<sup>13</sup>. These authors distinguish biliary, ocular, menstrual, cerebral, and allergic forms although they state the evidence for the last type is insufficient. They are cautious about the relationship between migraine and epilepsy. From a therapeutic point of view they find it convenient to distinguish five principal and a few minor types: (1) alimentary including biliary "duodenal", and abdominal migraine, (2) dietary, closely related to the former, (3) metabolic associated, as the case may be with acidosis, alkalosis, or hypoglycemia, (4) allergic, (5) vasoconstrictor and sympathetic, with calcium for the former and ergotamine tartrate for the latter as useful remedies. Among other "types" are those associated with ocular defect, sinus disease, and a "para-epileptic" type. As a final therapeutic suggestion after mention of the usual remedies they make the following startling statement: "For the very severe cases which do not respond to the above measures we would recommend a right subtemporal decompression. Gordon Holmes says that he has never known migraine to persist in a patient who has had a surgical or traumatic decompression."

According to Hahn<sup>14</sup>, the following succession of events occur in migraine: (1) angioconstriction with constriction of the vessels, (2) secondary vasodilation due to the action of locally formed substances, (3) exudation into the tissues as a result of vasodilation. Hahn admits

that frequent occurrence of angospasm predisposes in later life to organic disease of the vessels concerned, for example, he suggests that there may be the same relation between simple migraine and later hemiplegia as between angina pectoris vasomotoria and coronary thrombosis

#### *Treatment of Migraine*

While working on the action of chondroitin sulphuric acid in peptic ulcer, Crandall and Roberts<sup>13</sup> incidentally learned that some of the patients were relieved of their habitual headaches. Later giving this substance to forty-two patients having periodic headaches, they found that more than half were greatly benefited. The amount of chondroitin sulphuric acid usually given was 3 Gm daily, either in one dose or in divided doses, in powder or in capsules. The chief constituent of chondroitin is glycuronic acid, which is known to act favorably in cases of hepatic insufficiency, and some investigators have stressed the part of disordered liver function in migraine.

Kottmann<sup>14</sup>, who believes that migraine is most frequently caused by localized increased sympathetic tonus of vessels, recommends ergotamine tartrate, which is the active alkaloid of secale cornutum isolated by Stoll in 1918. This substance has a strong inhibiting action on the sympathetic nervous system and has been used for migraine since first recommended by Maier of Zurich in 1926. It may be given in doses of 0.5 cc hypodermically at the beginning or even at the height of the attack. It is also effective in stopping attacks, if given in tablet form by mouth, three tablets a day for a long period have prevented attacks. It is worthless in cases on a vagotonic basis.

#### CEREBROSPINAL FLUID

##### *The Rôle of Ventricular Dilation in the Spread of Infections from the Subarachnoid Space into the Ventricle*

Flexner<sup>15</sup> states that it is a generally accepted view that there is a steady flow of the cerebrospinal fluid from the ventricles into the subarachnoid space. Probably in part because of this view tubercles of the ventricular ependyma have been thought to occur only when bacilli pass from the blood through the choroid plexus into the ventricles. There is, however, abundant evidence from the studies of Rich and McCordock, who demonstrated that tuberculosis of the ventricles results in the absence of the blood stream infection, that such infection must be accounted for by a retrograde passage of bacilli from the subarachnoid space. In further support of this view Flexner, who points out that infections of the ventricles have been observed to follow primary infections of the meninges, made measurements in the cat of the volumes of the ventricles and the subarachnoid space and of the quantity of the cerebrospinal

fluid which may be aspirated from subarachnoid space into the ventricles by ventricular dilation. A comparison of these volumes indicates that a significant volume of fluid may be sucked into the ventricles, and offers an explanation for the retrograde passage of bacteria and other foreign matter from the subarachnoid space into the ventricles.

##### *Relationship of Arterial Blood Pressure to Cerebrospinal Fluid Pressure*

Comparing the arterial blood pressure and the cerebrospinal fluid pressure in one thousand four hundred and eighteen cases which were observed at the Boston City Hospital, Fremont-Smith and Merritt<sup>16</sup> conclude that in uncomplicated cases, there is no relationship between the cerebrospinal fluid pressure and the arterial blood pressure, whether systolic or diastolic. There was found to be a definite increase in cerebrospinal fluid pressure in cases of uremia and congestive heart failure. An increase in the intracranial pressure has no effect on the arterial pressure, until the level of the cerebrospinal fluid pressure exceeds that of diastolic pressure. There were six uncomplicated cases of arterial hypertension, in which the cerebrospinal fluid pressure was over 200 mm. The authors have no explanation for this.

##### *Use of Sodium Amytal for Prevention of Lumbar Puncture Headache*

According to the experience of Kulchar and King<sup>17</sup>, the use of sodium amyta, 3 gr one-half hour before the puncture, reduces the incidence of reactions after lumbar puncture in ambulatory patients from 25.5 per cent to 13.5 per cent. The preliminary use of this drug also makes the lumbar puncture less difficult for the operator and less of an ordeal to the patient.

##### *Neurologic Hazards of Spinal Anesthesia*

As Smith<sup>18</sup> points out, it has been shown, both experimentally and clinically, that spinal anesthesia may be followed by neurological disorders, such as mild meningeal reactions, at times associated with an ocular palsy, more severe meningeal irritation with adhesions to the cord, and rarely degenerative lesions of the cord. Smith cites a case of typical hysterical anesthesia and paralysis of the legs, developing about six months after the anesthetic was administered. Another patient developed a schizophrenic syndrome following the anesthesia.

Of a group of forty-five patients subjected to spinal anesthesia, Martin and Halbron<sup>19</sup> observed neurological complications in eight cases. Four patients had headache, one transient urinary and fecal incontinence, one urinary retention for four days, and one extensive ocular paralysis and trigeminal anesthesia.

Hyslop<sup>20</sup> reports a case of "aseptic meningoencephalitis" following spinal anesthesia. He

recommends, as a possible preventive, drainage of spinal fluid after the operation, in order to remove any drug that may be not yet fixed in the tissues, or otherwise eliminated.

Lunney<sup>21</sup> cites a fatal case following spinal anesthesia. Within a few minutes after the injection, the patient's fingers were numb and soon his speech became thick and muffled, which was followed by complete loss of speech. A few minutes later respiration ceased. Intravenous saline, glucose, and adrenalin proved futile.

Loeser<sup>22</sup> reports five cases of neuritis which developed from one to three weeks after the administration of the spinal anesthesia and which lasted a few months. In two cases, the ulnar nerve was involved, in one case the radial and in the other two, the sciatic nerve.

#### PHYSIOLOGY AND PATHOLOGY OF THE CEREBRAL VESSELS

##### The Nerve Supply of the Cerebral Blood Vessels

It is Stöhr's<sup>23</sup> opinion that there are no specific vascular nerves in the brain. He states that there is anatomic evidence to show that although the entire vascular system is under nervous control, the syncytial character of the sympathetic nervous system makes it impossible to separate the nerves of the vessels from those of the surrounding tissue. To assume a special "vasoneurotic diathesis" is, according to Stöhr, taking a too narrow view, as the interlacing of nerve supply necessarily brings adjacent muscle, gland or other tissue under the same abnormal influence.

Although it has been demonstrated that the vessels of the brain are under nervous control, this does not prove as Cobb<sup>24</sup> states, that normally this mechanism plays an important function. At present it can best be stated that there is a partial vasomotor control of the cerebral vessels.

##### Polycythemia and the Problem of Central Regulation of the Blood Picture

Salus<sup>25</sup> cites the following five cases as evidence of a central nervous regulation of the red corpuscles: (1) postencephalitic narcolepsy with increased red blood count during the intermittent attacks of narcolepsy, (2) genuine narcolepsy with polycythemia, (3) the same, (4) postencephalitic obesity with mild Parkinsonism and polycythemia, (5) sarcoma of left frontal lobe with interbrain and hypophyseal symptoms and polycythemia. In all these cases there was a proportionate increase in red cells, hemoglobin, and reticulocytes.

On the basis of animal experiments and blood examinations in twenty-eight cases of organic nervous diseases, Riccitelli<sup>26</sup> concludes that (1) there are, in the brain regulatory centers not only for the chemical but for the morphologic

constituents of the blood, (2) these centers are probably in the floors of the third and fourth ventricles, (3) they exert controlling influence not only on the peripheral blood but on the differentiated hematopoietic tissue.

##### Intracranial Hemorrhage and Purpura Hemorrhagica

After reviewing this subject, which shows that cerebral, meningeal and ventricular hemorrhages have occurred in this disease, Alpers and Duane Jr.<sup>27</sup> relate two new cases, one fatal but without necropsy. In the first case, a man forty seven years old with a history of epistaxis, had choked disc and retinal hemorrhage, the further course is unknown. The second patient, a girl of four years of age, had a long history of purpuric spots in the skin and mucous membrane and intestinal hemorrhages. Toward the end disc swelling and retinal hemorrhages appeared the spinal fluid was yellow and contained many red cells. After the third lumbar puncture a convulsion occurred. The temperature rapidly rose to 107 degrees and the child died.

##### Polycythemia and Its Neurologic Complications

Sloan<sup>28</sup> calls attention to the predominantly nervous and mental symptomatology recorded in the literature in this condition. He reports four cases. In the first, in addition to the usual features of polycythemia, thrombosis of the Sylvian artery with paresis of the lower right part of the face and right arm and various aphasic manifestations were presented. In addition, the patient had a spontaneous subarachnoid hemorrhage. The second, third and fourth cases illustrate the various mental manifestations observed in polycythemia vera.

Winkelman and Burns<sup>29</sup> report two cases of polycythemia, in which mental confusion was prominent. The brain on necropsy was enlarged and purplish. Perivascular edema was marked and occasional perivascular hemorrhages were present. Severe degenerative changes in the gaucha cells were observed. A second patient showed a more marked psychosis, no necropsy was done.

##### Hypertensive Encephalopathy in Nephritis

Evans<sup>30</sup> stresses the point that the occurrence of such symptoms in nephritis as headache, convulsions, coma, and amaurosis often occur in the absence of uremia. He believes that these symptoms are most probably due to circulatory disturbances in the brain resulting in ischemia and, in some cases, edema. The best remedies for hypertensive encephalopathy appear to be resection, lumbar puncture, restriction of fluid intake, and morphine. It is Evans' belief that intravenous injection of hypertonic solutions to decrease intracranial pressure in these cases is

not without danger, since by thus increasing the blood volume even temporarily is hazardous

### ENCEPHALITIS

#### *St Louis Epidemic*

According to Hempelmann<sup>31</sup>, up to November 15, 1933 the total number of reported cases in St Louis and that portion of St Louis county immediately adjacent was 1,104 and the total number of deaths was 216, a mortality of 19.5 per cent. The following features characterized the epidemic. It occurred in the summer months and chiefly affected older adults, only about 11 per cent of the patients being less than fifteen years of age. Of 1087 cases analyzed, 58 per cent were of more than forty years of age, and 42.5 per cent more than fifty years of age. Second cases in the same family occurred in about 3.5 per cent. Clinical course—the onset was usually sudden with high fever and pronounced meningeal symptoms, recovery was ordinarily rapid and eye symptoms and sequelae were rare. Three types of cases could be distinguished.

Type I showed an abrupt onset with headache, high fever, nausea, stiff neck, and positive Kernig. Convulsions might occur. Mental confusion, aphasia, and tremor of hands, tongue and lips were common. Drowsiness might be supplanted by hyperexcitation but noisy delirium was rare. Pains in the back and limbs were rather frequent and occasionally some hyperesthesia occurred. Ocular manifestations were rare, the commonest being slight blurring of vision and less frequently transient double vision. Neurologically, the commoner signs were absence of abdominal reflexes, positive Kernig sign, and often pathological toe signs. Fundus examination showed only engorgement of retinal vessels. The pupils were small but reacted well. The temperature curve was usually highest at the onset of the encephalitic symptoms, falling by lysis and reaching normal in about six to ten days, occasionally it fell by crisis, or was unduly prolonged. Retention of urine was common, especially in older individuals. The leukocyte count varied from 4000 to 36000. Spinal fluid cell counts were between 300 and 500.

In type II a definite prodromal period of one to four or more days was present. This was characterized by headache, fever, grippy pains, sore throat, or other mild respiratory symptoms, photophobia, and mild conjunctivitis and chilly sensations. Usually the temperature fell during the next four days and the patients seemed to be on the road to recovery, when there would be a sudden exacerbation of the fever, and headache and a typical encephalitic picture developed.

Type III showed very mild symptoms—headache, fever, stiff neck were usually present but no tremors or mental confusion. Lumbar punc-

ture showed an increase in cells. Recovery was rapid as a rule, often within ten days to two weeks. Pathologically, there was an intense vascular congestion, cellular infiltration, and a toxic degeneration of the nerve cells.

#### *Other Forms of Encephalitis*

Other types of encephalitis, including the more diffuse forms (encephalomyelitis, ophthalmo-encephalomyelitis, disseminated encephalomyelitis) following smallpox, chicken pox, measles, scarlet fever, whooping cough and mumps, continue to be reported, including those by Brouwer, de Jongh, and Rochat<sup>32</sup>, Van Boogaert<sup>33</sup>, Dubois, Ley, and Dagnelie<sup>34</sup>, Young<sup>35</sup>, McKaig and Woltman<sup>36</sup>, ter Braak and van Herwaarden<sup>37</sup>, and Stout and Karnosh<sup>38</sup>. The last-named authors analyzed twenty-eight cases of disseminated encephalomyelitis, occurring in epidemic form in Ohio. Of these, ten recovered, three were convalescing, six showing residual features, five relapsed, three died and one is unknown.

Twenty cases of encephalomyelitis are also reported from Cincinnati by McIntyre<sup>39</sup>. Death occurred in nine cases.

#### *Sydenham's Chorea (Chorea Minor)*

Wallace<sup>40</sup> analyzed 219 cases of this type of chorea. A high proportion of these cases had had rheumatism in the past. In some cases, certain physical and nervous factors other than rheumatism appeared to act as exciting causes of the chorea. The study also brought out that left-handed children appeared to be more liable to contract chorea than right-handed children. Involvement of the heart was present in 42.5 per cent of the total cases.

#### *Treatment of Sydenham's Chorea*

Bateman<sup>41</sup> reports good results from typhoid vaccine injections in this disease. The best effects were observed when the temperature was 104 to 105 degrees. Injections were given intravenously daily until the choreic movements disappeared. For greatest effectiveness it was usually found that the vaccine must be doubled each day if an adequate fever was to be maintained. Most patients showed a marked improvement after two or three treatments and were usually free from choreic movements in a week.

Another therapeutic procedure for chorea minor is the use of nirvanol (phenylethyldantoin). Whitaker<sup>42</sup> discusses this treatment. In his experience, there is no danger from the use of this drug in properly controlled cases without complications. There is suggestive evidence that nirvanol may be of definite antirheumatic value. Furthermore, by shortening the course of the chorea, the incidence of subsequent carditis may be lessened.

## NEUROSYPHILIS

*The Argyll-Robertson Pupil*

Merritt and Moore<sup>14</sup>, who analyzed the records of 749 cases of neurosyphilis found that the Argyll Robertson pupil was observed in 287 cases or 38.3 per cent. The cases were subdivided as follows: the tabetic or dementia paralytica forms of neurosyphilis 240 cases or 83 per cent, other forms of neurosyphilis forty seven cases or 17 per cent. Merritt and Moore define the Argyll Robertson pupil as one having the following characteristics: (a) an absence of the reaction to light, (b) miosis, (c) imperfect dilatation in response to instillations of atropin and to painful stimuli, (d) an absence of reaction to vestibular stimulation, and (e) an active reaction on accommodation for near objects.

As a result of their studies, Merritt and Moore conclude that these characteristics are due to a destruction of the pupillary light reflex fibers and the sympathetic fibers. These fibers run together for a short distance in the anterior end of the brain stem just ventrally to the posterior commissure. A destructive lesion at this point would explain all of the phenomena of the Argyll Robertson pupil. Any lesion at this point would produce the Argyll Robertson pupil, but the only incontrovertible cases heretofore reported were associated with syphilis of the nervous system, except a few cases associated with gliomatous invasion in this region. Therefore, for all practical purposes, the Argyll Robertson pupil is pathognomonic of syphilis of the central nervous system.

*Treatment of Neurosyphilis*

Wagner-Jauregg<sup>15</sup>, who introduced the malarial treatment of general paresis, doubts the value of any fever producing agency except the production of an actual disease. He divides all fever producing agencies into three classes: (1) those not derived from microorganisms, they are the poorest, (2) products of microorganisms, (3) the infectious diseases themselves. He still finds tertian malaria the most useful.

*Comparison of Various Forms of Fever Therapy*

Wilgus and Kuhns<sup>16</sup>, who examined the records of 500 general paretics treated by various forms of fever therapy, gives the following table of results:

Forms of Therapy	Im proved	Unim proved	Worse
Typhoid vaccine	52%	.8%	20%
Sulphur in oil	58%	21%	21%
Malarial therapy	66%	.0%	14%
Diathermy	72%	11%	17%
Electric blanket	78%	16%	7%

*Diathermy Treatment in General Paresis*

Freeman, Fong and Rosenberg<sup>17</sup> are very pessimistic regarding the value of this form of

therapy in general paresis. In their hands, it met with almost complete failure. They believe that the early reports on the diathermy treatment were published after too short a period of observation. Malaria, in their experience, is by far the better form of fever therapy.

Their experience agrees with that of Worthing<sup>18</sup>. He states that although there is some place for diathermy in the treatment of the more cooperative patients there is actually more suffering with diathermy than with malaria.

*Hyperthermia Treatment by Means of Hot Baths*

Walenski<sup>19</sup> has treated 353 patients with neurosyphilis by this method during the past five years. He first administers 10 cc. of a 20 per cent salt solution to diminish sweating and strengthen the heart. The patient is then placed in a tub of water of 38 degrees centigrade, the temperature of which is raised in twelve to thirty minutes to 41 to 42 degrees. The desired body temperature is then usually reached, and the patient is placed in a dry, hot pack and given hot drinks. Severe heart and kidney disease are contraindications to the treatment. In ninety cases of tabs so treated surprisingly good results were obtained, particularly as regards gastric crises and lancinating pains. Of sixteen cases of general paresis complete remission took place in 19 per cent, and in another 30 per cent there was improvement so that the patients could do some work.

*Tryparsamide Treatment of Neurosyphilis*

Reese<sup>20</sup>, who analyzes tryparsamide and malarial therapy in neurosyphilis, states that of 341 cases of general paresis treated by the former drug, there were 54 per cent showing clinical arrest or remissions and 78 per cent showing clinical or serological cures. According to Reese a survey of the treatment of general paresis with tryparsamide or malaria shows much the same percentage of remissions or improvement. The best results are probably obtained from the combined use of tryparsamide and malaria. He usually begins with the former and decides later which is the better form of therapy.

*THE SPINAL CORD**Pathogenesis of Poliomyelitis*

Simon Flexner<sup>21</sup> states that the evidence is now strong that the virus of this disease ascends from the nasal membranes to the olfactory lobes of the brain and then continuously by nerve conduction to the mid brain and spinal cord. He further states that since the virus, as originally present in human nervous tissues, is of low infectivity for monkeys, the failure to induce disease in these animals by inoculation of spinal fluid is not conclusive evidence of its absence from the spinal fluid. The virus can

ployed for the experimental nasal installation is highly potent for monkeys. Hence the altered spinal fluid withdrawn from the animals so inoculated was injected intravenously into the Macacus rhesus monkeys, and the procedure was followed by an accelerating injection eight days later. No detectable pathologic effects arose in these animals. Therefore, Flexner concludes that in man and the monkey, the virus of poliomyelitis, even in small amounts, does not pass from the infected nervous tissue into the cerebrospinal fluid, and the cellular changes in the fluid represent a reaction of the nervous system to injury and are not the result of the virus in the fluid itself.

#### *Forced Drainage in the Treatment of Poliomyelitis*

This method of therapy was worked out by Kubie and has been used in several diseases of the nervous system, including poliomyelitis. Kubie and Retan<sup>51</sup> make a recent report on their experience with this form of treatment. By forced drainage is meant the washing out, so to speak, of the ventricles and the subarachnoid spaces, including the perivascular and pericellular spaces of the brain and cord. This is accomplished by drinking large amounts of water and, at the same time, draining the spinal fluid for several hours to a few days. The authors explain that it is only under the special conditions of forced drainage that the formation of cerebrospinal fluid in large amounts throughout all the parenchymatous tissue of the central nervous system can occur. Pure drainage alone draws only the surface fluid of the pre-existing lake of cerebrospinal fluid and obstructs the formation of any fluid and also drainage from the depths by allowing collapse of the leptomeninges. Forced drainage causes fluid from the perivascular channels and the depths to course to the surface, carrying with it any products of inflammation. Under such conditions, there is no increase in intracranial pressure or any hydration of the parenchyma. This type of treatment was tried in different types of syphilis of the nervous system, multiple sclerosis, epidemic encephalitis, Parkinson's disease, and chorea. Although there are at present not enough cases to make statistical treatment possible, the clear-cut symptomatic and clinical changes after forced drainage shows that this therapy affects the course of acute and chronic infections of the nervous system. The authors point out surprising results in chronic cases of syphilis. Alterations were observed in reflexes, changes were noted in the pupillary responses, disappearance of chronic and intractable pain, and improvement in sphincteric control.

#### *Polyganglionitis (Posterior Poliomyelitis)*

An interesting example of this uncommon infection is reported by von Sántha.<sup>52</sup> The patient,

sixty years of age, began to complain in 1931 of backache, headache, and fatigue. The following year his gait was weak and unsteady. The knee and ankle jerks on the left were absent and sluggish on the right side. The spinal fluid showed marked increase in protein and gave a positive Lange test in the higher dilutions. The ataxia increased and all tendon reflexes and the abdominal and cremasteric reflexes disappeared. Sensation was much impaired in the trigeminal area and elsewhere. The patient died in 1933. Necropsy revealed degeneration of the posterior columns of the cord and thinning of the posterior roots. The peripheral nerves showed secondary degeneration. Microscopically, the peripheral nerves of the upper and lower extremities contained both severely degenerated and perfectly normal fiber bundles. In all the spinal ganglia examined, most of the cells had been destroyed. All the posterior roots were almost completely demyelinated. The anterior roots were normal. The posterior columns of the cord showed degeneration up to the nuclei in the bulb. The gray matter in the thoracic region showed large lymphocyte infiltrations about the veins. All parts of the gray matter in the lower thoracic region were affected. There was fatty degeneration of the root fibers of the trigeminal and glossopharyngeal nerves and the tractus solitarius. The cerebral cortex and basal ganglia were practically normal.

#### *Antirabic Vaccine Paralysis*

Three fatal cases of Landry's type of ascending paralysis and two cases of transverse cord lesions with recovery are reported by Stuart and Krikorian.<sup>53</sup> A carbolized vaccine had been used in the treatment of these cases of rabies.

After giving a detailed description of these cases and of another case of Landry's paralysis without antirabic vaccine, Getzowa, Stuart, and Krikorian<sup>54</sup> conclude that there seems to exist some deleterious substance in the antirabic vaccine, capable in peculiarly susceptible individuals of producing neuroparalytic disorders. The predominant feature in these cases of Landry's paralysis is a widespread lesion of ganglia cells, inducing the occurrence of a rapidly advancing and rapidly fatal paralysis. Because of the total absence of perivascular zones of demyelization and of perivascular cuffing, it is probable that the antirabic treatment factor does not belong in the heterogenous group of factors capable of producing acute disseminating encephalomyelitis.

#### *Fatal Ascending Paralysis Following Typhoid Vaccination*

The meager literature on the nervous sequelae to typhoid vaccination is reviewed by Gayle, Jr., and Bowen.<sup>55</sup> These authors report an unusual reaction following typhoid vaccination. Their patient, a few days after inoculation with

a 5 cc. typhoid paratyphoid vaccine, complained of numbness in his arms and legs. After a second injection of 1 cc two weeks later, he gradually developed weakness in the legs and arms. Three weeks later he had flaccid paralysis, complete in the legs, and partial in the arms. The tendon reflexes and abdominal reflexes were absent, and there was diminished vibratory sensation. Within a few days fatal bulbar paralysis set in. Postmortem examination of the cord showed swelling and degeneration of the cells in the cord and bulb. The peripheral nerves near their exit from the spine were described as swollen, congested, and degenerated.

#### *Pathogenesis and Treatment of Multiple Sclerosis*

Putnam<sup>26</sup> has been able to obtain local areas of demyelination imitating the plaques of multiple sclerosis by injecting tetanus bacilli, by inducing carbon monoxide poisoning and by injecting emulsions of cod liver oil into the carotid artery of cats and bland oily substances into the ligated longitudinal sinuses of dogs. Putnam states that since the lesion is produced by a simple mechanical interference with the blood supply it is superfluous to postulate a specific demyelinating organism, virus, or toxin to account for the pathological picture. The ultimate etiologic factor in multiple sclerosis should probably be sought in the local vascular abnormality or in some alteration in coagulability of the blood. As regards therapy in multiple sclerosis, Putnam states there have been no positive advances made. Most of the empirical methods of treatment, including fever therapy, arsenicals, antimony compounds, high vitamin diet, x ray treatment, ultraviolet light, forced drainage of the spinal fluid, and quinine have been thoroughly tried without more success than can be accounted for by the hope which they engender in the patient's mind.

#### *Lead as a Possible Cause of Multiple Sclerosis*

Cone, Russel and Harwood<sup>27</sup> have made an investigation of the occurrence of lead in multiple sclerosis. This substance was found in the spinal cord at necropsy in a typical case of multiple sclerosis. In another case of neuromyelitis optica, lead was present in the brain and in the spinal cord. The brain contained larger amounts of lead than the normal appearing brain. The authors were also able to demonstrate lead in the stools, urine and cerebrospinal fluid of six cases of the disease. In the case of neuromyelitis optica, calcium stopped the advancing myelitis and caused lead to disappear from the spinal fluid. The authors state, however, that it is too early to state whether calcium is a satisfactory therapeutic agent in multiple sclerosis. They do not dogmatically state that because lead is found in the central nervous system, in the spinal fluid,

in the bones, and liver, and in the excreta, it is therefore, the cause of the disease, although the constant association of the metal in their cases of multiple sclerosis strongly incriminates it. They finally conclude that their work suggests lead as a possible etiologic agent in multiple sclerosis of the exacerbating and remitting type.

#### *Treatment of Cord Degeneration in Pernicious Anemia*

Meulengracht's<sup>28</sup> experience with 136 cases of pernicious anemia, observed since he started liver therapy in 1927, brings out the following striking features: (1) many patients developed cord symptoms during liver treatment, (2) there was much evidence to show that these patients had not received sufficient liver and that patients with cord changes required larger doses than patients without cord symptoms. The author found it gratifying that the cord symptoms frequently subsided by increasing the amount of liver or by adding or substituting ventriculin.

#### *PERIPHERAL NERVES*

##### *Alcoholic Neuritis*

Minot Strauss, and Cobb<sup>29</sup> take up the problem of dietary deficiency as a factor in the production of this form of neuritis. After studying fifty seven cases and the records of seventy three additional cases, the authors conclude that dietary deficiency probably particularly the lack of vitamin B 1, plays an important part in the production of alcoholic polyneuritis. Furthermore, it is probable that the deficiency is attributable not only to inadequate intake, but also to the state of the gastrointestinal tract and the presence of factors that can inhibit the effectiveness of nutritional elements.

##### *Neurological Complications of Serum Sickness*

Doyle<sup>30</sup> reports one, a case of complete flaccid paralysis of the deltoid and partial of the biceps and some shoulder muscles which came on seven days after prophylactic injection of scarlet fever antitoxin and, two, a case of similar paralysis following injection of tetanus antitoxin. A review of the literature made by Doyle disclosed forty nine cases of neurologic complications from serum injections: thirty nine followed tetanus antitoxin, seven diphtheria antitoxin, five scarlet fever antitoxin, two anti pneumococcal serum type I, and one antivenereal serum. In most of these cases, the neurological complication was an involvement of some part of the brachial plexus.

##### *Etiology and Treatment of Retrobulbar Neuropathy*

From a review of 225 cases of retrobulbar neuropathy at the Mayo Clinic Benedict<sup>31</sup> gives the following data as to etiology: multiple sclerosis in 155 cases, pernicious anemia and nicotine in

fou1teen, diabetes in fourteen, alcohol and tobacco in twenty-eight, syphilis in two, congenital amblyopia in four, familial causes in one, sinus disease in one, postpartum hemorrhage in one, plumbism in two, and indeterminate causes in three cases. In more than 500 definitely proved cases of multiple sclerosis seen at the clinic, disturbance in vision was given as the first symptom in about fifteen per cent. In another thirty-five to forty per cent, disturbances of vision were seen in subsequent episodes. In all the cases, the syndrome of retrobulbar neuritis was the symptom most commonly observed. Intranasal sinus operations had been performed elsewhere in more than sixty per cent because of visual disturbances. The treatment found most successful in the author's hands has been intravenous injections of triple typhoid vaccine in increasing doses, from 25,000,000 to 450,000,000 bacteria, the injections being given three to four times weekly until the vision has returned, or until it becomes evident that the treatment is of no avail.

#### *Roentgen Treatment of Trigeminal Neuralgia*

In Hummel's<sup>62</sup> experience with twenty-seven cases of trigeminal neuralgia by x-ray, good results were obtained in 37 per cent. The treatment is directed at the gasserian ganglia, from one to fourteen treatments being given at intervals of eight days.

#### *Surgical Treatment of Meniere's Disease*

Equally encouraging as Dandy's results reported in 1928, are Coleman's and Lyerly's<sup>63</sup> results in the surgical treatment of Meniere's disease. The latter report ten cases in which intracranial section of the eighth nerve for the relief of that condition was done. The operation was done with a negligible risk and recovery from the operation was prompt in every case. The diagnosis of Meniere's Disease is based on the history of attacks of violent vertigo, accompanied by nausea and vomiting, tinnitus in one ear and partial deafness in the same ear. Although following the operation some of the patients have had slight unsteadiness, particularly on sudden change of position, none of them have had an attack of vertigo. The unsteadiness tends to improve with time and is not disabling. Tinnitus, when not entirely abolished by the operation, has been improved in every case. In the discussion of these results, Dandy states that in his experience with thirty cases of Meniere's disease on which he has operated, there was no mortality and no return of attacks of vertigo, there was no loss of function except the remaining hearing which is of no practical value.

#### *Treatment of Sciatica*

Craig and Ghormley<sup>64</sup> report their therapeutic results in sciatica due to various causes

in eighty cases epidural injection caused complete relief in 52 per cent, marked relief in 24 per cent, and no relief in 22 per cent. In thirty-six cases diathermy caused complete relief in 33 per cent, moderate relief in 12 per cent, and no relief in 55 per cent. The combination of epidural injection and diathermy was applied in 21 per cent. In 42 per cent of these, there was complete relief, in 10 per cent moderate relief, and in 48 per cent no relief. A sacroiliac belt and diathermy were employed in fifty-two cases. Relief was complete in 32.6 per cent, moderate in 13 per cent, and in 54.4 per cent there was no relief. Epidural injection, a belt, and diathermy were tried in eight cases. Eighty-five per cent of these patients were completely relieved, 2 per cent moderately relieved, and 13 per cent were not benefited. On twenty-eight patients who were confined to bed, the following measures were employed double Buck's extension, diathermy, epidural injection, intravenous injection of foreign protein, and elimination of foci of infection. Of these patients 85.7 per cent were completely relieved, 14.3 per cent moderately relieved. In fourteen cases the same measures were employed except that the epidural injections were omitted. Complete relief resulted in 63 per cent, moderate relief in 23 per cent, and no benefit in 14 per cent.

#### *VEGETATIVE NERVOUS SYSTEM*

Many papers dealing with the results of sympathectomy for various conditions have been written in the past year. The following are chosen for brief reviews.

#### *Resection of Splanchnic for Essential Hypertension*

Craig and Brown<sup>65</sup> make a preliminary report of four cases of hypertension, in which the splanchnic nerves were resected. The results showed some reduction in the levels and responses of the systemic blood pressure, except in the most severe cases.

#### *Treatment of Volkmann's Contracture by Periarterial Sympathectomy*

Ländivár and Iparragirre<sup>66</sup> report the case of a woman, aged twenty-one, who developed a Volkmann's contracture following fracture of the distal end of the radius. Humeral arterectomy for a length of 10 cm was followed by complete disappearance of the contracture. The patient obtained complete functional recovery and the appearance of the hand and arm was normal two years after the operation.

#### *Sympathectomy for Relief of Periodic Edema of Hand*

Abbott<sup>67</sup> reports a case of a Jewish woman, thirty years old, in whom intermittent swelling and discoloration of the entire left hand had persisted for eighteen years. In September of 1931 a cervicothoracic lumbar sympathectomy

was performed. Since then the hand has been normal.

#### *Sympathectomy for Raynaud's Disease*

Gask<sup>44</sup> obtained good immediate results in seven cases in which he excised a portion, one inch long, of the thoracic sympathetic trunk from below the second thoracic ganglion up to and including the stellate ganglion. Although the immediate results of the treatment are good, states the author, the improvement is not lasting in all cases, some remaining greatly improved and others only slightly.

#### *Resection of Perisacral Nerve for Bladder Control*

The results at the Mayo Clinic with sympathetic neurectomy are reported by Adson.<sup>45</sup> Eight cases were operated on for paroxysms of the musculature of the bladder due to injury. Two were considered cured and four improved. In two cases in which there was difficulty in starting the flow of urine, sympathetic neurectomy resulted in immediate and continuous cure of the difficulty. In six of the eleven cases with invertebrate vesicle pain caused by various conditions, the results after presacral neurectomy have been satisfactory.

### THE ENDOCRINES

#### *Diagnosis and Treatment of Hypogonadism in the Male*

McCullagh, McCullagh, and Hicken<sup>46</sup> have isolated a testicular hormone called "androtin" which appears to be effective in the treatment of certain cases of sexual impotence in the male. These authors have made an assay of 200 specimens of body fluids for testicular hormone by means of a capon method. They report the results of treatment with androtin in seven cases of hypogonadism. They found that the most demonstrable changes following treatment seemed to be a common tendency (1) to a rise in basal metabolism, (2) to a fall in the level of blood cholesterol, and (3) to recovery of testicular hormone from the urine after its administration. In some cases motile spermatozoa have been found in fluid obtained by prostatic massage after the treatment, where none were found before. Common symptomatic changes following the treatment have been the following: increase in sexual potency, decrease in vaso-motor and nervous disturbance, increase in frequency of nocturnal emissions, and increased energy.

#### *Therapeutic Use of Adrenal Cortex Hormone*

Leyton<sup>47</sup> has tried intravenous injections of an active extract of suprarenal cortex in selected cases of neurasthenia. The suitable cases seemed to be those which followed some infection, cases with low blood pressure, low blood sugar, and subnormal temperature. Leyton

found the results sufficiently promising to justify a therapeutic trial on a wider scale.

Robbins<sup>48</sup> observed excellent results from the use of the extract in an asthenic condition following an acute streptococcal sore throat with a low blood pressure.

Hartman, Beck, and Thorn<sup>49</sup> describe three cases in whom the main complaint was nervous or muscular fatigue. In the first case, a male, aged forty-seven, who had been complaining of fatigue, insomnia, visual disturbance at night, tremor, and pyloric spasm since 1926, was greatly benefited by injections of cortex. The second case, a female, aged twenty-seven, who had lost three pounds in the last three years and who since February, 1931, had been complaining of periods of weakness, during which anorexia, restless sleep, visual difficulty, palpitation, dyspnea, irritability, and depression were prominent, felt well when put on 160 Gm. of cortex daily, but when reduced to 120 Gm. or less showed a return of symptoms. Case three was a male, aged forty-one, who had had typical anxiety attacks for a year. He showed physical signs of marked nervous tension, blood pressure was 135 systolic and 90 diastolic. He improved considerably on cortex, but it was impossible to continue the treatment as long as seemed desirable.

### MUSCULAR DYSTROPHY AND MYASTHENIA GRAVIS

Tripoli and Beard<sup>50</sup> report their clinical and biochemical results following the oral administration of amino acids. These authors state that the results of many studies have shown that in cases of muscular dystrophy, the creatine metabolism of the muscles becomes deranged. It is well known from the work of many investigators that the patient suffering from muscular dystrophy is unable to retain creatine in the muscles. When ingested, most of it is excreted in the urine making the patient practically "diabetic" as regards creatine. This is accompanied by a great loss of muscle tissue and function. When creatine is given as such, most of it passes through the body and is excreted in the urine. Thus, feeding creatine is useless in the treatment of muscular dystrophy. On the other hand, the feeding of amino acids, such as glycine and glutamic acid cause for the first few weeks an increased creatinuria which gradually subsides, the creatine being retained in the muscles. At this time clinical improvement and an increase in function is noted.

Tripoli and Beard administered glycine or glutamic acid fed in 10 or 20 Gm. doses daily in six cases of various dystrophies and atrophies. The total number of cases reported by these authors and others to date is sixty-nine, fifty-one of which showed decided clinical improvement after amino acid therapy. The most marked clinical improvement is noted in those cases

grouped as muscular dystrophies (caused by primary lesions in the muscle which probably are primarily abiotrophic) Very little improvement was noted in cases grouped as progressive nuclear muscular atrophy

Boothby<sup>75</sup> makes his third report on the results obtained by the use of glycine and ephedrin in myasthenia gravis observed at the Mayo Clinic. The glycine is usually given in doses of 30 Gm daily, together with, at times, 3/8 grain of ephedrin twice daily. Twelve patients were treated. Ten showed definite improvement, four of whom were markedly improved. In two there was no response to treatment except that the progress of the disease was apparently arrested. One of these two died from causes not directly attributable to the myasthenic syndrome. Boothby finally concludes that by the careful use of either ephedrin or glycine, more often of both, most patients with myasthenia gravis can be improved sufficiently to permit them to return to work or, at least, to enjoy a useful life. Time alone will tell whether this improvement can be maintained.

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### THE PHYSICIAN AND THE NURSE

1. Let us recognize the essential team relation-  
ship between the doctor and the visiting or public  
health nurse each with a primary obligation to the  
patient and with supplementary community obliga-  
tions as well.

2. Let us try to resolve the actual or potential  
conflict between the private doctor and the treat-  
ment motive on the one hand and the public health  
nurse and prevention on the other by

a. Retaining at least a minimum of the genuine per-  
sonal service element in the field program of  
the nurse—a phase of her work which the doc-  
tor automatically understands and appreciates;

b. Utilizing the help of the nurse to expand for the  
doctor the growing field for the private practice  
of preventive medicine;

c. More fully informing the doctor as to the wide  
range of concrete services the nurse has to  
offer to him and his patient, in both treatment  
and prevention perhaps using pneumonia and  
the communicable diseases as fresh wedges in  
more widely opening this field, particularly  
as it encompasses the non indigent patient.

3. Let us avoid the errors of the past, recognizing  
the basic obligation of the nurse to uphold the pro-  
cedures and standards of private medical practice,  
and to aid in preserving the personal relationship of  
doctor and patient.

4. Let us recognize the at least contemporary dis-  
tinction in the doctor's mind between communicable  
diseases with their community and epidemiological  
relationships on the one hand, and the non-com-  
municable, constitutional affections with their es-  
sentially private features on the other.

5. And finally let us call upon our visiting nurse  
associations to furnish in cooperation with other  
community agencies the vision and leadership es-  
sential, first, to the acquainting of the doctor with  
the character and purpose of the visiting nurse as-  
sociation and the public health nurse to the sell-  
ing of the nurse's wide range of services to the doc-  
tor to the wiping out of existing points of irrita-  
tion and conflict to the featuring of the doctor's and  
the nurse's common interests and objectives in both

treatment and prevention as they affect the patient  
and the community — Summary of an address by  
Donald B. Armstrong M.D. Reprinted from *Public  
Health Nursing* November 1934.

### EFFECTION OF THE NON RESIDENT ON DEATH AND BIRTH RATES IN BUFFALO

A cursory glance over the birth and death statistics  
for the city of Buffalo during past years reveals that  
a large proportion of such births and deaths are of  
persons residing elsewhere than in the city. During  
the first nine months of the current year twelve  
per cent, or nearly one in eight deaths, and thirteen  
per cent, or more than one in eight births were of  
such non residents and during the past five years  
these percentages have remained nearly constant.  
The result of these additions is to raise the rates by  
corresponding proportions giving a picture of the  
vital conditions which is far from representative of  
the true status.

The Division of Vital Statistics of the New York  
State Department of Health has long recognized the  
difficulties involved in this situation. In 1936 in the  
Annual Report of that division, we read: One of the  
most involved problems in the statistical evaluation of  
health conditions of communities is presented by  
the need of an equitable allocation of deaths of non-  
residents. The importance of considering the ele-  
ment of residence in computing death rates is be-  
coming more evident each year. The growth of the  
hospital habit which brings large numbers of sick  
people from rural and from small urban districts to  
well-equipped city hospitals for treatment is in many  
instances, responsible for most or all of the disparity  
in the death rates of those sections of the  
State. Cities with excellent hospital facilities are  
likely to show because of that fact, higher death  
rates than places less fortunate in this respect. At  
the same time the death rates of certain rural  
districts are affected adversely by the existence within  
their limits of hospitals, sanatoria, and other insti-  
tutions, most of whose inmates are not residents of  
the district.—*Sanitary Bulletin* Published by the  
Buffalo Department of Health.

**CASE RECORDS**  
*of the*  
**MASSACHUSETTS GENERAL**  
**HOSPITAL**

ANTE MORTEM AND POST MORTEM RECORDS AS USED  
 IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.

**CASE 21011**

**PRESENTATION OF CASE**

A seventy-one year old American widower was admitted to the Emergency Ward complaining of severe weakness.

An adequate history could not be obtained. He did say, however, that he had had severe weakness and vague abdominal pain of about six weeks' duration.

Physical examination showed a thin, emaciated man who was somewhat flighty and confused. He had evidently lost a large amount of weight. The tongue was dry, beefy and fissured. The fundi showed marked sclerosis. His lungs were clear except for a few râles at the right base. The heart was enlarged to the left, the apex beat being felt in the axillary line. The rate was regular and the beat forceful. There was a loud, high-pitched systolic murmur heard best at the apex and aortic area and poorly transmitted to the axilla. The blood pressure was 144/100. The brachial arteries were sclerotic and tortuous. The abdomen was slightly distended and occasional peristaltic waves could be felt. The liver was felt two fingerbreadths below the right costal margin in the midclavicular line. Upon deep inspiration the patient complained of pain across the upper abdomen. There was no subcostal tenderness on either side.

The temperature was 100.8°, the pulse 120. The respirations were 25.

Examination of the urine showed a specific gravity of 1.015 and a very slight trace of albumin. The sediment showed 15 white blood cells and an occasional red blood cell, as well as numerous bacteria. Examination of the blood showed a red cell count of 3,850,000, with a hemoglobin of 65 per cent. There was a white cell count of 30,200, 90 per cent polymorphonuclears. The non-protein nitrogen of the blood was 87 milligrams. The blood sugar was 130 milligrams.

On the day following admission the patient was much worse. The blood pressure had dropped to 80 systolic, and the diastolic could not be obtained. He was given a large amount of five per cent glucose intravenously. A urological consultant did not believe that the prostate was enlarged. There was, however, a residual of about three ounces of urine which

was believed to be due to a slightly enlarged median lobe. A questionable tender mass, possibly an enlarged kidney, was felt in the right flank. On the third day the patient became very drowsy and could not be roused. His temperature remained elevated at about 100.5° and his respirations had increased to about 40. He rapidly failed and died on the third day after admission.

**DIFFERENTIAL DIAGNOSIS**

DR HOWARD B. SPRAGUE I should like very much to know what the clinicians who had the privilege of seeing this case thought was the cause of death because I am sure that I do not know.

If we boil this story down, if we can boil down such a meager story, we have a thin, disoriented old man who is dehydrated, anemic and complaining of vague abdominal distress for six weeks, with slight fever and weakness. He comes into the hospital, no adequate history can be obtained, and he apparently does not have whatever benefit he might have received from further study. He dies in three days.

I should think the diagnosis would have to be made on a statistical basis rather than on what one found on examination. Of course at this age one thinks of malignancy and arteriosclerosis, cardiovascular disease, and in this case there is a suggestion of an additional septic factor.

As for the malignancy, we have the age, the marked loss of weight, the abdominal distress, the question of a mass in the right flank and visible and palpable peristalsis. This makes one think of malignancy of the large bowel, although the question of kidney was raised by the consultant.

The arteriosclerosis I think is about the only thing that we can be sure of. We have it in the fundi, in the radials, with the suggestion that it is in the cerebral circulation from the mental attitude, and we have an increased non-protein nitrogen which is suggestive of arteriosclerotic kidney and a uremic death.

As for sepsis, there is some fever, some pain across the upper abdomen, a markedly increased white count and increased respirations. The degree of dehydration here may account for certain changes in the blood picture, which may be dependent upon the concentration of the blood. I should think that he might very well have had a terminal bronchopneumonia. There is little that we can use to convict the kidney as the source of infection. One perhaps should always think of a cryptic pancreatic episode, which on a vascular basis can sometimes be very confusing, and possibly even of mesenteric thrombosis or embolism. The history seems to be very long for this, however.

As to the heart, the patient did not die a

cardiac death, if by that we mean that he died with orthopnea, or pain in the chest, or with an abrupt exit. We must grant, I think, that the heart was enlarged, the apex being in the axillary line, and there is a murmur which the cardiologist of course sizes upon. It is described as a loud high pitched systolic murmur heard best at the apex and aortic areas and poorly transmitted to the axilla. We can only say by indirection that it might have been better transmitted to the neck or aortic area. There is a little suggestion that the loudness was more marked at the base. The other point is that there was a regular rhythm and that the beat was forceful. The blood pressure is distinctly noncommittal, I should say. There is a drop to 80 systolic, but every patient who dies has a blood pressure drop to 80 systolic before he dies, presumably. This murmur might be caused by one of various things. One wonders if the anemia does not result in a hemic murmur or whether the patient had a previous hypertension with dilatation of the heart and mitral regurgitation, or whether there is an arteriosclerotic process in the aortic valve or even a left ventricular dilatation from a previous coronary occlusion. However, dilatation seems to me unlikely because of the forceful beat. In dilatation the apex beat is more diffuse usually and not forceful, so that perhaps aortic stenosis is a guess which should be considered though we know nothing about the thrill about the heart sounds, about the presence or absence of the aortic second sound, or the character of the pulse. We have had some old people enter this hospital with systolic murmurs who had a rather high degree of calcification of the pericardium which was unsuspected. There is nothing here to indicate that. I will have to say something so I will guess that he might have had abdominal malignancy, generalized arteriosclerosis, uremia, terminal pneumonia and possibly aortic stenosis.

DR. TRACY B. MALLORY Any case that comes in in a condition where a history is unobtainable puts us off to a very bad start at once. Perhaps Dr. Wheeler can add a little information that we were not able to get out of the records.

DR. ROY R. WHEELER I can give little further history. The patient was an old man who lived alone. His son stated he felt that his father had been sick for some time, but nothing very definite was known about it. My impression at the time was that he had an arteriosclerotic nephritis with uremia. I felt that the right upper quadrant condition was an inflammatory process. Physically he showed moderate distention of the abdomen and diffuse pain with some spasm all through the right upper quadrant and flank, with dullness to flatness in the right lower chest. He was too sick for any

elaborate investigative procedures and clinically he went steadily downhill and died.

DR. CHANNING S. SWAN I saw this patient the day after admission. He was semiconscious. He had not voided for about twelve hours. The non protein nitrogen was 87 milligrams and it was very suggestive that it might be a case of prostatic obstruction. The prostate by rectal examination, however, did not seem to be enlarged. I catheterized the patient and found a few ounces of urine which could not be said to be residual urine, as the patient did not void for several hours. There was a definite mass in the right flank and upper quadrant which was consistent with the right kidney. I could not make out whether it was tender because the patient was comatose. I suggested that he be given supportive treatment and further examination if he improved. I could not make any diagnosis at that time. There was no positive evidence that he had an enlarged prostate but without cystoscopic examination it could not be ruled out.

#### CLINICAL DIAGNOSES

Chronic nephritis  
Uremia

#### DR. HOWARD B. SPRAGUE'S DIAGNOSES

Generalized arteriosclerosis  
Uremia  
Bronchopneumonia  
Abdominal malignancy, (? large intestine)  
Aortic stenosis

#### ANATOMIC DIAGNOSES

Ruptured dissecting aneurysm of the abdominal aorta.  
Hematoma of the right diaphragm  
Hemothorax, right.  
Arteriosclerosis, generalized.  
Aortic stenosis, arteriosclerotic type  
Hypertrophy of the heart.  
Pulmonary atelectasis.  
Bronchopneumonia.

#### PATHOLOGIC DISCUSSION

DR. MALLORY I think this patient's condition was entirely undiagnosable on the evidence presented. Even at autopsy it was some time before it was evident what had happened. The right thoracic cavity was full of blood and we could find no explanation for it in any lesion of the lungs, the heart or the thoracic aorta. As we looked at the upper surface of the right diaphragm we found a tumor mass, perhaps five inches thick which was soft and deep red in color. On cutting into it the diaphragm seemed to have been separated into two layers by a mass of blood clot. As we traced this blood downward it evidently passed along the right crus of the diaphragm to a point in

apposition with the abdominal aorta at the level of the renal artery, where a rupture of the aorta was discovered

A PHYSICIAN You mean that was an aneurysm?

DR MALLORY Yes, a dissecting aneurysm limited to a short segment of the abdominal aorta. The rupture of external layers of the aortic wall which is the immediate cause of death in most cases was in this instance not immediately fatal, since the dissection continued up through the diaphragm, and only with the final rupture into the pleural cavity did the hemorrhage become of fatal proportions.

A PHYSICIAN How long before he actually died do you think that started?

DR MALLORY You can almost always separate these histories into two episodes. I think the onset of pain three or four days before death represents the initial period of dissection. Exactly when the outer coat ruptured I cannot be sure, but the perforation into the pleural cavity was probably terminal.

A HOUSE OFFICER A point which I failed to write into the record concerns his back pain. Every once in a while he would sit up in bed and put his hands across the upper abdomen, even though he was semicomatose, and say, "Oh, my back." We did not know where it hurt, but he did have pain in his back.

DR MALLORY That might well have been of real assistance to Dr Sprague, since back pain is very frequent in dissecting aneurysms.

As to the rest of the autopsy, Dr Sprague was correct in prophesying severe general arteriosclerosis, hypertrophy of the heart and a moderate grade of senile aortic stenosis. The right lung showed extensive collapse and a moderate amount of terminal bronchopneumonia. A small area of infarction was discovered in the brain in the right lenticular nucleus.

#### CASE 21012

##### PRESENTATION OF CASE

A sixty-one year old American housemaid entered complaining of pain in the back of one and a half week's duration.

Ten days before entry the patient fell down a flight of stairs and developed pain in the back. She was not unconscious but was unable to get up although she could move her legs. A physician strapped her back. Her bowels had not moved for about one week. The pain in her back continued and she entered the hospital.

The family and marital histories are non-contributory.

She had the usual childhood diseases including scarlet fever. There was no history of typhoid fever. During the past four years she had developed slight shortness of breath upon exertion. Her appetite had always been poor

and she required cathartics to keep her bowels open. She had nausea and vomiting about once a week for the past five months, also attacks of "grabbing" abdominal pain for about one year. Her catamenial history was negative. During the past year she had shooting pains down her legs as well as occasional fleeting pains in her joints. She occasionally had attacks of staggering at which time everything appeared black and spotted before her eyes. The last attack occurred two weeks before entry. For one year she had nocturia two or three times and also vague aches and pains in the extremities. She had lost forty-three pounds during the past three years.

Physical examination showed a well-developed and fairly well-nourished woman in no distress. The mucous membranes were slightly pale. The lungs were clear except for a few moist râles at the bases. The heart was not enlarged. There was a loud, blowing systolic murmur at the apex, but it could also be heard all over the precordium. No diastolic murmur could be heard. The apex beat was quite diffuse and forceful. There was moderate tenderness over the lower ribs on the right side. Pelvic examination showed moderate tenderness in the right vault and a vague sense of resistance. There was a profuse yellowish, thick vaginal discharge.

The temperature was 98.6°, the pulse 88. The respirations were 20.

Examination of the urine showed a specific gravity of 1.010 to 1.012 with a large trace of albumin. A sediment showed 6 to 8 white blood cells and an occasional cast. The blood showed a red cell count of 2,140,000, with a hemoglobin of 55 per cent. There was a white cell count of 18,800. A smear showed marked achromia and slight anisocytosis of the red blood cells. The platelets were slightly increased. The white blood cell differential showed 62 per cent polymorphonuclears, 25 per cent lymphocytes and 13 per cent blast forms. A stool examination was negative. A Hinton test was negative. The serum protein of the blood was 11.7 per cent.

X-ray examination of the chest showed slight cardiac enlargement. There were no mediastinal masses. The lung fields were clear. A gastrointestinal series was negative. There was rather wide trabeculation in the sacrum but no increase in the size of the bone or any evidence of metastases. Films of the shoulder girdles showed generalized atrophy and several small punctate areas of diminished density. A lateral view of the skull showed numerous rounded, sharply defined areas of diminished density together with some atrophy.

Further blood smears showed plasma cells with occasional normoblasts. On the sixth day Bence-Jones protein was found in the urine. The non-

protein nitrogen of the blood was 107 milligrams per cent. She rapidly failed, became comatose, developed signs of bilateral bronchopneumonia, and died on the tenth day.

#### DIFFERENTIAL DIAGNOSIS

DR. WILLIAM D. SMITH A sixty-one year old housemaid enters complaining of back pain precipitated by a fall ten days previously. We are not told whether her pain was over the sacrum or between the shoulder blades. If pain in the back were worth recording at all at least we should be told the location of the pain. I should be inclined to ignore this complaint were it not for the fact that on reading on one suspects a condition in which fracture might easily occur with relatively slight trauma. The fact that she could move her legs suggests that there was no severe cord damage.

During the past four years she has developed slight shortness of breath on exertion. This raises the question of heart, lungs, anemia or general weakness.

There had been slight gastro-intestinal symptoms as suggested by occasional nausea and vomiting and attacks of "grabbing" abdominal pain for about a year. This statement is entirely too vague to permit us to speculate on the cause of these symptoms but I would make the same comment on the "grabbing" abdominal pain that I did on the back pain; that is, if this pain was regarded as of significance, certainly its location, severity, duration and possible radiation should have been recorded.

The story of shooting pains in the legs and fleeting joint pains of the past year is too vague to be helpful.

The occasional staggering, when things appeared black and spotted before her eyes, raises the question of real vertigo, anemia, general weakness or perhaps sudden hemorrhage.

If she was a poor sleeper or kept awake by aches and pains, her nocturia may mean nothing. If, on the other hand, she was awakened two or three times at night by the necessity of voiding we might assume urinary infection or nephritis.

The loss of forty two pounds makes one think of malignancy, although it is not unusual for ageing people developing arteriosclerosis to lose a good deal of weight.

The physical findings show pallor of the mucous membranes, a few moist rales at the lung bases with a loud blowing systolic murmur audible all over the precordia. Rheumatic heart disease would be unusual in a woman of sixty-one and this systolic murmur suggests arteriosclerotic heart disease or perhaps anemia or possibly both combined. The presence of moist rales at the lung bases suggests a slight degree of congestive failure, particularly when considered in relation to her increasing shortness of breath on exertion.

Tenderness over the lower ribs on the right may be the result of trauma from her fall or, as we read farther in the history may suggest the possibility of pathology in the ribs themselves.

Pelvic examination I will not comment upon other than to say that there is nothing in the vaginal discharge to suggest carcinoma. It was not foul or bloody. I suppose that she may have had an endocervicitis, possibly a pelvic infection or tumor, perhaps even an infection with trichomonas vaginalis although here again there is nothing characteristic of this in the description of the discharge.

We note normal respiration, slightly accelerated (88) pulse, and normal temperature.

The urine analysis with its large trace of albumin suggests nephritis but one is struck by the rather striking absence of formed elements in the microscopic sediment as compared with the large amount of albumin. This feature does not, of course, rule out a chronic nephritis.

The blood examination shows a severe grade of anemia with a hemoglobin of 55 per cent, a red cell count just over two million, and a white cell count of 18,800, with platelets slightly increased and marked achromia. (This illustrates what we so often see in our blood reports. As indicated by the red count and hemoglobin the patient has a high color index and yet the examination of the smear reports marked achromia.) I am going to bank on the smear and assume that she has an anemia definitely of the secondary type. The differential count is not remarkable except for the presence of 13 per cent of blast forms. In any profound anemia an occasional immature white cell may be present but 13 per cent of immature cells deserves respect. A white cell count of 18,000 in the absence of fever suggests that the leukocytosis is due to something other than an infectious process. Taking the blood picture as a whole, pernicious anemia is obviously out of the question. The increased white cell count and the increased platelets might suggest acute blood loss but again we have 13 per cent of blast forms which points to some bone marrow disturbance. Such a picture is compatible with a leukemia with an unusually low white count, or malignancy with bone marrow metastases, or perhaps with myeloma.

The serum protein at 11.7 per cent, if correct, is almost double the normal. I do not know very much about such an increase but it certainly indicates a profoundly altered metabolism and perhaps may be explained by a greatly increased endogenous protein catabolism. Abnormally high serum protein has been reported in some cases of myeloma.

There is nothing in the x-ray examination of the chest that need detain us. The trabeculation in the sacrum I should regard as the changes of increasing age. The skull plates

showing numerous rounded, sharply-defined areas of diminished density make one think of possible myeloma or of metastatic carcinoma from some unknown primary focus. I have a notion, however, that the sharply defined character of these areas is rather more suggestive of the myeloma tumor than of metastatic carcinoma, which I think would tend to have more irregular or ragged outlines.

I note that further blood smears identified these blast forms as plasma cells with occasional normoblasts, again suggesting bone marrow disturbance. Furthermore, if one regards multiple myeloma as a plasma cell tumor, one might perhaps regard them as tumor cells in the peripheral blood.

The appearance of Bence-Jones protein in the urine makes us immediately consider the classic condition in which this appears, that is, multiple myeloma. On the other hand, we must not forget that it may occur in carcinomatosis with metastasis to the bone marrow, in chloroma, in osteosarcoma originating in the bone marrow, and occasionally in leukemia.

A non-protein nitrogen of 107 milligrams per cent in connection with the large trace of albumin again makes us think of the possibility of nephritis, but an increased nitrogen may occur in leukemia or possibly in any condition in which the endogenous protein katabolism is speeded up. Incidentally, the severe nephritis sometimes associated with myeloma must be kept in mind.

To sum up we have a woman of sixty-one obviously going downhill for the past two or three years with weight loss, vague pains in her limbs, a little shortness of breath, a severe secondary anemia with 13 per cent of immature cells later recorded as plasma cells, high serum protein and high non-protein nitrogen, Bence Jones proteinuria, and an x-ray consistent with multiple myeloma which seems an almost obvious diagnosis. However, when we talk about myeloma we are pretty close to the leukemic group and myeloma has been reported with a blood picture of a plasma cell leukemia, so perhaps Dr. Mallory may show us some unusual type of leukemia associated with bone tumor. Further, one has to think of the possibility of carcinoma with metastasis to bone and bone marrow associated with Bence-Jones protein. It seems to me that there is nothing in the record to suggest other causes of bone rarefaction such as osteomalacia, osteitis fibrosa cystica, or hyperparathyroidism.

#### CLINICAL DIAGNOSES

Chronic nephritis with uremia  
Multiple myeloma

#### DR. WILLIAM D. SMITH'S DIAGNOSES

Multiple myeloma  
General arteriosclerosis

- ? chronic nephritis
- ? pelvic pathology
- ? terminal bronchopneumonia

#### ANATOMIC DIAGNOSES

Multiple myeloma.  
Myeloma of kidney  
Myelomatous infiltration of spleen  
Pulmonary infarct  
Arteriosclerosis, aortic, slight

#### PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY Multiple myeloma is a disease in which the history is rarely of much diagnostic value, whereas there are numerous strongly suggestive or even diagnostic laboratory procedures. The work of Magnus-Levy, Bell and others has called attention to the very frequent association of a specific type of renal pathology in association with myeloma. So far as I know it is limited to the myeloma cases which show Bence-Jones protein in the urine. These cases show a mechanical plugging of the collective tubules with large hyalin casts of exceptional density. The tubules above the point of blocking are apt to be distinctly dilated, and this may be so marked that the condition has occasionally been described as intranephric hydronephrosis. This patient showed such a condition although in not so marked a degree as some other cases we have seen. Another point of considerable interest in the case was the appearance of plasma cells in the circulating blood. I believe it would have been possible to make a flat-footed diagnosis of myeloma from an examination of the blood smear alone. As is often the case, however, these plasma cells were not recognized by several examiners until Dr. Hunter pointed them out. In our own examination of the blood we found about five per cent of plasma cells, rare myelocytes and quite numerous nucleated reds which were not reported in the hospital differential count. Occasionally the invasion of the blood stream with plasma cells may be so great that a diagnosis of plasma cell leukemia is justified. This type of blood-stream invasion is most apt to occur in the cases where the myelomatous infiltration of the bone marrow is diffuse without the formation of the multiple focal tumors which can be recognized by x-ray examination. In this case the bone marrow showed both localized tumor formation and diffuse infiltration. Infiltration may appear in the internal organs but is not usually extensive. In this patient many atypical cells, only a few of which could be positively recognized as plasma cells, were found in the spleen while the liver and lymph nodes were uninvolved. The only other finding of significance was a small pulmonary infarct.

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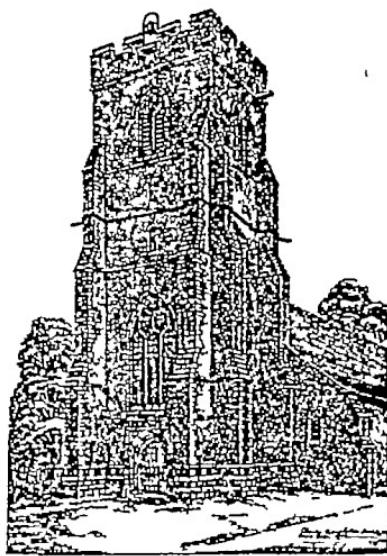
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## WILLIAM HARVEY'S CHURCH

WILLIAM Harvey died June 3, 1657 and was buried in Hempstead Church in Essex. The Fellows of the College of Physicians of London followed his body to the church, where it was wrapped in lead and laid in the family vault. There it remained until October 18, 1883, when several Fellows of the College, in the presence of the President, Sir William Jenner, saw the body transferred to a white marble sarcophagus and placed in a special chapel erected by the College. The church has become a shrine to physicians from all parts of the world. Here lies one of the greatest of all men of medicine and everything connected with the building has a special appeal to the medical world.

The church was originally constructed in the fourteenth century. Its ancient tower collapsed in 1882. About ten years ago a movement was set on foot to rebuild this tower and some local subscriptions were collected to that end. At the time of the Harvey tercentenary in 1928 celebrating the publication of "De Motu Cordis", an additional impetus was given to this movement by the Royal College of Physicians of Lon-

don. As soon as additional donations were received, the work of reconstruction was begun and the tower is now partly finished and only awaits further funds to complete it. As noted in the *Lancet*, November 3, 1934, "The present appearance of the structure seems to convey a reproach to us all from the great dead." Ac-



Proposed restoration of tower of Hempstead Church, Essex, England. The black line indicates the approximate height to which the tower has now been built.

cordingly a further appeal for the sum of \$10,000 necessary to finish the work is made to the whole medical profession. The members of the Harveian Society of London to mark their centenary in 1931 instituted a special fund for the reconditioning and rehanging of the bells." It is hoped that this appeal will be widely noticed in America.

Donations are invited from all members of the medical profession and should be made payable to the Harvey Memorial Fund and sent to Dr G de Bee Turtle, Royal College of Physicians of London, Pall Mall East, London, S W 1.

*Courtesy of The Lancet*

## QUESTIONABLE INSURANCE POLICIES

In the November 22 issue of this *Journal* page 983 attention was called to the selling of insurance policies in Massachusetts by a company not licensed in this state.

Current reports in the daily press indicate that a large number of people in Bristol County have bought policies issued by a company which has repudiated the claims of the holders.

State Commissioner of Insurance, Merton L. Brown, has explained that there is difficulty in suing a company of this character for action

must be taken in the state where the company is chartered, and again the warning is issued that residents of Massachusetts should not purchase insurance from a company which is not licensed to transact business in this state. Records are on file in the State Department of Insurance respecting licensed and unlicensed insurance companies. Policies in unlicensed companies are not to be depended on. There are too many ways of losing money to take a chance with insurance companies which have no standing in the state where the policies are sold. The old adage that "the buyer must beware" is especially appropriate in the insurance field.

#### THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

WEBBER, ISAAC M B.S., M.S., M.D. Bowdoin Medical School 1920 F.A.C.S. Surgeon, Maine General Hospital, St Barnabas Hospital and Children's Hospital Consulting Surgeon, Webber Hospital, Biddeford, Maine. His subject is "The Limitations of Enterostomy and Undesirable Effects Incident to Its Use" Page 1 Address Leighton Building, Portland, Maine.

STURGIS, SOMERS H M.D. Harvard University Medical School 1931 Member of Staff, Out-Patient Department, Cambridge Hospital Address 3 Pinckney Street, Boston, Massachusetts Associated with him is

LUND, CHARLES C A.B., M.D. Harvard University Medical School 1920 F.A.C.S. Surgeon, Collis P Huntington Memorial Hospital Assistant Visiting Surgeon, Boston City Hospital Instructor in Surgery, Harvard Medical School Address 319 Longwood Avenue, Boston, Massachusetts Their subject is "Leukoplakia Buccalis and Cancer" Page 7

FREEDMAN, HAROLD J B.S., M.D. Harvard University Medical School 1927 Formerly, Assistant Pediatrician at the Boston Dispensary, and Pediatrician in the Out-Patient Department of the Beth Israel Hospital Now Assistant Physician, Medical Department, Children's Hospital His subject is "Acute Anaphylactic Shock Following Intracutaneous Test for Sensitivity to Horse Serum Report of a Fatal Case" Page 10 Address 371 Commonwealth Avenue, Boston, Massachusetts

WHITE, CHARLES E M.D. Boston University School of Medicine 1929 His subject is "The Relation of Areus Senilis to Arteriosclerosis and Senility" Page 10 Address Taunton State Hospital, Taunton, Massachusetts

LOMIN, JULIUS M.D. Tufts College Medical School 1925 Instructor in Neurology, Tufts

College Medical School Psychiatrist, Research Staff of Boston State Hospital Assistant in Neurology, Beth Israel Hospital His subject is "Progress in Neurology in 1933." Page 13 Address 270 Commonwealth Avenue, Boston, Massachusetts

#### MISCELLANY

##### PROCEDURE FOR CONTROLLING BOVINE MASTITIS

Owners of cattle affected with mastitis, a disease of the milk glands, may take advantage of Federal emergency funds for combating the disease through the assistance of the U.S. Department of Agriculture This work is authorized by a new regulation designated as B.A.I. Order 351, to be effective January 2, 1935 The order, which will be administered by the Bureau of Animal Industry and cooperating State and local sanitary officials, provides that any owner may apply for the examination of his herd by an accredited veterinarian representing the Bureau or State Cows that show marked physical evidence of mastitis will then be removed and slaughtered and indemnities paid to the owner according to the appraised value.

Funds amounting to \$800,000 for conducting this work and for the payment of indemnities have been allotted by the Agricultural Adjustment Administration out of money made available by the La Follette amendment to the Jones Connally Act Similar emergency work was begun during the summer with bovine tuberculosis and Bang's disease of cattle, and the new order will extend the disease-control work to another cattle disease that is the source of heavy losses to dairymen.

#### CORRESPONDENCE

##### POOR RELIEF AND MEDICAL CARE

December 26, 1934

Editor, *New England Journal of Medicine*,

The letter of Dr Pavlo in this week's *Journal* is quite timely and pertinent to conditions as existing in Boston.

There was an offer to the Mayor by representatives of most of the physicians in the Boston Area to treat the indigent poor of Boston at the nominal rate of \$1 per visit, the same to be paid by the City.

It was ruled by the City Law Department, that the City could not under the Charter spend any money for physicians to treat the indigent of the City.

The Shadman Committee then, on behalf of the aforementioned group of physicians, offered to take care of the poor of Boston, without cost, providing the City Hospital would exclude all but the indigent poor and injured, according to the Charter of the Boston City Hospital.

This in my opinion would be the best solution of the difficulty, as we hope there is a limit to this de-

pression and that these unfortunates will not always be on the Welfare and the fact that most of the Welfare cases are now treated free by physicians.

However Dr Wilinsky as Dr Pavlo says approved of the City Hospital taking care of the poor and this plan had the complete endorsement of the Boston Health League — that great friend of the physicians of Boston!

I can visualize what would happen if this plan had gone through — We just have to observe the workings of Dr Wilinsky's Baby Hygiene. Do we general practitioners have any baby carriages stop at our doors during office hours now? Do people come to have their children vaccinated? Do we have any toxin-antitoxin work to do? No! Dr Wilinsky and his Corps of Nurses have attended to that and we not only lose this work but have to pay taxes to support the racket.

Notwithstanding your Editorial note Dr Pavlo is entirely right, one well paid job is enough to hold at any time. How much more true is this now when so many of our colleagues are in financial difficulties!

CHARLES MALONE, M.D.

46 St. John Street,  
Jamaica Plain Mass

#### A COMMENT ON CABOT CASE HISTORIES

New York,  
December 10 1934

Editor *New England Journal of Medicine*,

Just a couple of critical remarks after reading the last Cabot case histories. (1) Cancer increases with age. The proportion of deaths from cancer to living in the various age groups increases steadily from birth to death. Vide Ewing relation of old age to cancer. Am. J. Med. Sc., within a year or two. Also in pure Boston why do they call cancer "malignancy"? Malignancy is an attribute an abstraction. Bubonic plague is malignant and so are many cancers. I am profoundly shocked.

Sincerely yours,  
F S

#### THE TRANSLATION OF FRACASTORO'S SYPHILIDIS

December 27 1934

Editor *New England Journal of Medicine*

In a recent book review of "The Sinister Shepherd" a translation of Girolamo Fracastoro's *Syphillis* de Morbo Gallico Libri Tres, by William Van Wyck, printed in the *New England Journal of Medicine* page 651, issue of October 4 1934 the statement is made that "there are still other and equally good translations available although not in English. I wish to call attention to the translation made by Dr Wilmer Cave Wright "Fracastoro

Girolamo 1483 1553 De contagione et contagiosis morbis et eorum curatione Libre III translation and notes by Wilmer Cave Wright. (Hist. of medicine ser. No 2) 1930 Putnam and to that of Dr Martin Syphilis a translation in prose from the original Latin of (his) immortal poem with a history of (his) life by Mario Truffi, etc. Translated by S C. Martin. Second edition revised and enlarged 1931 Urologic and Cutaneous Press, St. Louis."

Sincerely yours

MADELAINE R. BROWNE M.D.

412 Beacon Street,  
Boston Mass.

**EDITORIAL NOTE** The above letter has been called to the attention of the reviewer. It is particularly regrettable that these references were not given in the original review and the reviewer can only plead carelessness in not referring to them. It might be pointed out that the translations into other languages are on the whole much superior to those in English.

THE WRITER OF THE REVIEW

#### LIAISON OF MEDICINE AND THE PRESS

Time  
The Weekly Newsmagazine  
New York-Chicago  
Editorial Offices  
135 East 42nd Street  
New York City

December 22 1934

Editor *New England Journal of Medicine*,  
The kind appreciation of Time's reporting of Medicine's news which you made in the November 15 issue of the *New England Journal of Medicine* came to my attention last month. My first impulse which I suppressed for fear of intruding among sensitive committeemen, was to applaud your recommendation of a publicity committee for the Massachusetts Medical Society and to offer what information and advice I have regarding such a committee's utility and function.

Such liaison between Medicine and Press should exist in every community especially now when social medicine is being discussed. The liaison should be constant and alert, and should be stimulated as often by the doctors as by the editors.

The set up you suggest resembles the New York Academy of Medicine's committee on public information. Your investigators doubtless will go to Manhattan to study the local mechanism. When they are here I shall gladly give them my viewpoint. Or if you prefer I shall gladly go to Boston to address them. If the latter a Tuesday or a Wednesday would be best for me

With best salutations of the season

Sincerely yours,

MIRROX WEISS, Associate Editor

**"LIVER THERAPY IN ANEMIA"**

Editor, *New England Journal of Medicine*,

Dr Trumper\* fails to give the exact reference in the *Talmud* wherein it states "For anemia have patients eat the viscera of creatures."

The word "*jārdq*" or "*jērlaqōn*" or *jarqōnā* may refer to "green" or anemic pallor, or *anemia*.

In Joma 84a Rabbi Mathja Ben Cheresch advised the use of *liver* (and meat) of an ass for one bitten by a mad dog. The "wise men" did not agree with this treatment.

In Sabbath 134a, Rabbi Nathan (Habavli, — of Buvel) speaks of *jārdq*, (*anemia*) in a hemophilic newborn male infant, and advises against circumcision.

Very truly yours,

HYMAN I GOLDSTEIN, M D

Camden, New Jersey,

December 20, 1934

Trumper A. *New Eng J Med* 211:1068 (Dec 6) 1934

NOTE A. Cornelius Celsus, in his work "On Medicine" (Book IV, Caput IV)—says 'Nor it is groundless opinion that a *fox's liver*, after being dry, and deprived of its juice, ought to be bruised, and the polenta from it sprinkled in the drink "Est etiā nō uana opinio uulpium iecur ubi siccū aridum factum est, contundi oportere polentāque ex eo potionis aspgi'

**RECENT DEATHS****FAVOURABLE MEDICAL JOURNAL EDITOR DIES**

DR. LEWIS STEPHEN PILCHER

Dr Lewis Stephen Pilcher, scholar and editor for half a century of the oldest surgical journal in the United States, the *Annals of Surgery*, died December 24, 1934, at eighty-nine years of age. Country school teacher, country practitioner, naval surgeon, student of tropical disease, anatomist, professor of surgery, editor, bibliophile, patriot—these nouns indicate a few of his many interests and activities over a long and intensely useful life.

Lewis Stephen Pilcher entered the University of Michigan at the age of thirteen, and took his bachelor's degree at seventeen, the youngest matriculant and the youngest graduate of that institution. His master's degree was added within a year, and in the same year he entered upon medical study. This was in 1863 when the Civil War was raging. The next year found him a volunteer hospital steward. Then back to the University of Michigan and the doctor's degree in 1866. In 1900, this same institution conferred upon him the honorary degree of Doctor of Laws. Practice began in a rural district of Michigan at the age of twenty, at the same time, to guarantee a livelihood, teaching in the little schoolhouse by the blacksmith shop. He rode his horse across the countryside to the call of the sick, followed the current literature of medicine, and for diversion read the classics in their original Greek and Latin.

The next move was to an internship in a Detroit hospital. Then a postgraduate course in the hospitals of New York City. And then came the successful examination and appointment as Assistant Surgeon in the United States Navy, in 1867. His retirement from the Navy and entrance into private practice in 1872 followed. He organized a dissecting room in his house. This expanded into an adjacent building. A museum and library grew up in connection with it. He dissected also at the Long Island College, and became Adjunct Professor of Anatomy, in 1879, and Surgeon to the Dispensary. In 1885 he was appointed Professor of Surgery at the New York Post Graduate Medical School.

In 1884 he became editor of the *Annals of Surgery*, which position he occupied to the time of his death. This publication, beginning in 1884, was acquired in 1897, by J B Lippincott Company. The editorial policy and censorship of advertising have never been relinquished by the editor. If we add to the fifty years of the *Annals of Surgery*, the seven years of the *Annals of Anatomy and Surgery*, and its predecessor which he inspired and dominated, this period of medical editorship establishes him as the dean of medical editors in the United States, if not in the world.

**McGINITY**—JOSEPH TANEY McGINTY, M D, of 146 Chestnut Street, Springfield, Massachusetts, died December 24, 1934. He was born in 1830 and graduated from the University of Vermont College of Medicine in 1905. He joined the Massachusetts Medical Society in 1914, was also a member of the Vermont State Medical Society, and a Fellow of the American Medical Association. He had been a member of the Staff of Mercy Hospital. He was a member of the Springfield Lodge of Elks, Archbishop Williams Assembly, the Knights of Columbus, and the Calvert Club.

He is survived by his widow, Mrs Anna Leary McGinity, three sisters, Mrs Mary Leonard of Mechanicsville, N Y, Miss Katherine McGinity of Thompsonville, Mrs John Hughes of Pittsfield, and a brother, Patrick, of Thompsonville.

**WINSLOW**—EDWARD SMITH WINSLOW, M D, of Harwichport, Mass., died December 28, 1934. He was born in Easthampton in 1866, the son of Dr Joseph Winslow and Mrs Emily Winslow, and graduated in medicine from the Dartmouth Medical School in 1892 and later studied at the Women's Hospital of London, England.

He served with the Army Medical Corps in the World War and was a past commander of the Harwich Post, American Legion. He also served on the staff of the Cape Cod Hospital in Hyannis.

He joined the Massachusetts Medical Society in 1893. He was a member of the Easthampton Masonic Lodge and the Hyannis Lodge of Elks.

His religious affiliations were with the Harwichport Pilgrim Church.

Dr Winslow is survived by his widow Mrs. Edith Watson Winslow a son Edward L. Winslow and a sister Mrs. Edmund Sawyer

## NOTICES

### IMPORTANT NOTICE

See Erratum on page ix, advertising section.

### CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 PM on Thursday January 10 in the Amphitheatre of the Peter Bent Brigham Hospital Dr Henry A. Christian, Physician-in-Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School will give a medical clinic. To it are cordially invited practitioners and medical students. These clinics will be repeated on Thursdays until May

On Saturdays in the wards of the Peter Bent Brigham Hospital from 10 to 12, staff rounds will be conducted by Dr Christian. These are open to all physicians

### LECTURES AND CLINICS ON HEART DISEASE BY DR. CHRISTIAN

Dr Henry A. Christian Hersey Professor of the Theory and Practice of Physic at the Harvard Medical School, will give a series of 13 lectures and clinics on heart disease at the Peter Bent Brigham Hospital as follows: January 14 at 8:30 A.M., January 17 at 4:30 P.M., January 21 at 8:30 A.M., January 24 at 4:30 P.M., January 31 at 4:30 P.M., February 7 at 8:30 A.M. and 4:30 P.M., February 14 at 8:30 A.M. and 4:30 P.M., February 18 at 8:30 A.M., February 21 at 8:30 A.M. and 4:30 P.M., and February 25 at 8:30 A.M. Physicians are cordially invited.

The subjects discussed will be the following

1. Physiology of heart in relation to normal and abnormal cardiac function
2. Symptoms and signs of cardiac disease varieties of heart disease and their diagnosis
3. Treatment of cardiac insufficiency with discussion of pharmacological action of chief therapeutic agents used
4. Special forms of heart disease angina pectoris and coronary occlusion.
5. Special forms of heart disease (continued) chronic non valvular heart disease including effects on heart of arteriosclerosis and of hypertension.
6. Special forms of heart disease (continued) chronic valvular heart disease syphilitic heart disease.
7. Special forms of heart disease (continued) acute endocarditis acute and chronic pericarditis

### REMOVAL

Dwight O'Hara, M.D., announces the removal of his office from 520 Commonwealth Avenue, Boston to 5 Bay State Road Boston

## REPORTS AND NOTICES OF MEETINGS

### HARVARD MEDICAL SOCIETY

A meeting of the Harvard Medical Society was held in the amphitheatre of the Peter Bent Brigham Hospital on the evening of December 11 1934 Dr Channing Frothingham called the meeting to order. The first case to be presented was that of a fifty two year old female who had had diabetes for the past seven years with dietary treatment during this period, and insulin for seven weeks. On entry she had lost about a hundred pounds was easily fatigued and had had a sudden hemoptysis three weeks before entry. Physical examination disclosed an emaciated woman showing no abnormal clinical pulmonary signs, but a positive x-ray and sputum that was positive for tubercle bacilli. Dr M. C. Sosman said that this patient represented the 'un sensitized' type of tuberculosis which is seen in children and in some diabetic adults.

The second case was that of a twenty seven year old married female, who had had an attack of pneumonia five years ago and a thickened pleura by x-ray two years ago. After a prolonged cold last winter her cough became productive of a sputum positive for tubercle bacilli and by x-ray she had signs of tuberculosis. Pneumothorax followed by temporary phrenic paralysis had been carried out, and she entered the hospital at this time for a thoracoplasty. There were signs of cavity on the left side. The first and second stages of a thoracoplasty had been carried out with the removal of the first to the eighth ribs. Dr Newton discussed the necessity of selecting the proper case for thoracoplasty and the safety of multiple operations. He said that the ribs are resected only over the diseased part of the lung.

Dr Gerardo M. Balboni spoke on "The Development in the Treatment of Pulmonary Tuberculosis from 1696 to the Present Time." Georgius Baglivi in 1696 was the first to propose treatment by means of a transverse incision between the ribs. Samuel Sharp in 1747 advised incision and drainage of the abscess there being very little distinction between tuberculosis and pulmonary abscess at this early date. Ebenezer Gilchrist in 1777 suggested a sea voyage as the best means of clearing up pulmonary infection.

It was James Carson who in 1819 insisted on operative surgery in the treatment of this condition and proposed pneumothorax. He treated two cases successfully in this way but his work was forgotten until 1909 when it was rediscovered. Many substances were injected by various men at different times in the nineteenth century with uniform failure to procure satisfactory results.

Forlanini in 1894 reported the first successful case of artificial pneumothorax and he used small amounts of nitrogen at frequent intervals. The beneficial results of spontaneous pneumothorax and hydrothorax had been recognized previous to this time.

Robinson in the early part of the present century used artificial pneumothorax at the Massachusetts General Hospital, and gave larger amounts of nitrogen. Dr Balboni has also been very active in this work.

Dr Reginald Fitz then spoke on "The Library May Afford a Certain Amount of Entertainment." He delivered a most fascinating lecture and showed how the library may be a place in which to have real fun. He based his talk on the life of Dr John H. Watson of Queen Victoria's army, who received his medical education from the London University Medical School, from which he graduated in 1878. After a series of exciting adventures in the Afghanistan War, from which he barely escaped with his life, he returned to London where he met a certain Sherlock Holmes. These two men set up a lasting alliance about which the average American citizen knows a good deal. Dr Watson introduced effective occupational therapy for neurasthenia on himself by busily taking notes of their numerous adventures. About seven years after their meeting he married a young lady three days after he had met her, and settled down to a practice which never really fully engaged his adventuresome mind. He then began to write up the various escapades of Holmes and himself, and frequently went with Holmes on new adventures. Soon after the supposed killing of Holmes by Moriarty, Watson's wife died, but Holmes reappeared three years later, and they again took up their quarters on Baker Street, where they lived for several years until Watson was married again to a mysterious girl about whom little is known. From this time he gradually broke away from Holmes, and faded away into obscurity.

Dr Fitz considers Dr Watson as a real doctor, one of the greatest, and a real personality.

#### THE DUNHAM LECTURES

Dr Ulrich Friedemann, formerly Professor at the University of Berlin and Director of the Division of Infectious Diseases, Virchow Krankenhaus, delivered the three Dunham Lectures for 1933-34 at the Harvard Medical School on the afternoons of December 4, 6 and 11.

After a brief introduction by Doctor Zinsser, Doctor Friedemann opened the first of his lectures on "The Distribution of Dyes in the Body." He believes that distribution is essentially regulated by a selective permeability of the vascular system and that the factors controlling this selective permeability are the same for dyes, toxins, drugs, and viruses. He studied in particular the selective vascular permeability in the brain.

Certain toxins are very poisonous to the brain cells if brought into direct contact with them, while having no influence if introduced into the blood stream. The conception that other organs absorb these toxins and thus protect the brain is refuted by the fact that the toxin stays in the blood stream a long time.

There are two barriers between the brain tissue and its surrounding tissues first, the blood-brain barrier which consists of the vessel walls, and secondly, the spinal fluid barrier. Some toxins are much more toxic intrathecally than intravenously. By injecting certain dyes into the blood stream of animals, Doctor Friedemann found that they stained the brain while the spinal fluid was free from the dye, thus indicating to him that the important route from the blood to the brain is directly through the vessel walls, and he set out to determine the factors controlling the selective permeability of this barrier. By injecting varying doses of several different dyes intravenously, he found that with the exception of aurantia, acid dyes did not tend to be absorbed at all or only when very high doses were used, while practically all of the basic dyes stained with only a very small dose. The affinity of the brain cells for these same dyes was then tested, and it was found that on the whole the basic dyes stain in far greater dilution than the acidic dyes. By a comparison of the doses needed directly with those needed by the intravenous route, the permeability of the vessels to the different dyes was determined, and it was concluded that the blood-brain barrier is more permeable to the basic dyes. The two basic dyes which passed the vessel walls with the greatest difficulty are amphoteric (malachite green and pyronin). It was found that colloidal or non-colloidal character of a dye was of no significance, and the size of the particle had no influence.

Doctor Friedemann investigated the phenomenon of reciprocal permeability by which certain substances will pass one way through a membrane but not the other. A potential gradient exists within the membrane and basic substances will pass only from the inner to the outer layers of the membrane while acid substances act in a reverse fashion. The blood-brain barrier is only slightly permeable to the antibodies of diphtheria and to the toxin of this disease when going from the blood to the brain but is permeable in the opposite direction. A much higher antibody titre is obtained when immunization is carried out intracerebrally than when it is carried out extracerebrally.

The second lecture of the series considered "The Distribution of Drugs, Toxins, and Viruses in the Animal Body." It was found that the drugs which act on the brain are to a large extent basic and that when acidic radicals are inserted, they are often detoxified. Certain drugs which are not toxic when introduced by the intravenous route become so when injected intrathecally.

The minimum lethal doses of toxins were compared when injected intravenously, intrathecally, and intracerebrally and it was found that toxins were usually five to ten times as toxic by the intrathecal route and twenty to forty times as toxic by the intracerebral route as by the intravenous method of injection. The blood-brain barrier is impermeable to the toxins of diphtheria, tetanus, botulinus, and

meningococcus, but is permeable to the toxins of cobra venom and lamb dysentery.

Insulin and thyroxin had no effect on the permeability of the brain capillaries, while adrenalin and pituitrin caused a marked increase in the permeability to dyes, alcohol, paraaldehyde, urethane, strichnine, cobra toxin and lamb dysentery toxin. These substances became five to ten times as toxic as they were before the injection of the adrenalin or pituitrin but these hormones had no effect where the blood brain barrier was impermeable before the injection.

It was found that most toxins have a negative charge while cobra venom carries a positive charge and is a base. These findings suggested that only those toxins which are basic or which are isolectric can pass the blood-brain barrier. The electric charge also has some effect on the length of the incubation time. Many of the viruses cannot pass the blood brain barrier and several reach the brain via the peripheral nerves. Their inability to pass the vessel walls is probably not due to their size but to their charge and certain other unknown factors.

The third lecture was on "The Pathogenesis of Diphtheria." The intravenous injection of from 500 to 1000 minimal lethal doses of diphtheria toxin does not lead to the presence of any toxin within the brain and therefore can have no effect via the brain on the circulatory failure seen in this disease.

Dr Friedemann studied many cases of malignant diphtheria in Germany and found that there are three stages of the disease in which circulatory failure may occur. The first stage is from the first to the fourth or fifth day and circulatory failure in this stage is very fatal. Except for the occasional finding of traces of cellular infiltration or fatty degeneration, there are no histological or electrocardiographic changes and heart failure in this type is thought to be due to an insufficient venous return to the heart rather than to the effect of the toxin. In the second stage of the disease from the fifth to the tenth to fourteenth days, circulatory failure is accompanied by irregularities of the heart beat without cardiac dilatation. The electrocardiogram shows changes in the conductive system with varying types of heart block. Complete heart block may occur without any change in the pulse rate and can be told only by the electrocardiograph. Histological study shows definite lesions in the conductive system in all cases. These lesions consist of foci of cellular infiltration within the bundle of nervous tissue with very little change in the myocardium, although occasionally there are small areas of infiltration in the muscle also. There are often hemorrhages from the smaller branches of the coronaries. The liver may demonstrate similar hemorrhagic and infiltrative changes. Death from heart failure in this second stage is not due to toxin in the heart muscle but rather to lesions in the coronary vessels.

In the third stage, after the fourteenth day the electrocardiogram may show sinus arrhythmias, a smaller amplitude of the ventricular complex and

an inverted T wave in the second lead. The histologic changes are extensive with hyaline degeneration of the heart muscle fibers and vascular lesions of the coronary vessels are suggested. There is extensive fibrosis of the heart and it is believed that the heart failure of this stage is not due to toxin but perhaps to the vascular lesions, although it has been commonly thought that the postdiphtheritic heart failure is caused by vagal neuritis, since there is often a neuritis of the spinal nerves. The onset of cardiac failure in this stage is often sudden with abdominal pain and vomiting and death following in a matter of hours or days. The heart is often enormously dilated probably the result of a loss of tonus in the myocardium. There is an intracardial tonus center near the sinus node and the dilatation may be a consequence of the poisoning of this center. Although the oxygen consumption in such a dilated heart is about three times that of a normal heart, the vascular atony prevents an increase in blood supply and sudden death is the result.

It is seen therefore that the failure of the vascular system is important in the heart failure of all three stages of diphtheria. This circulatory failure is not well understood but is probably closely connected with other shock like conditions the peripheral vascular system, the autonomic nervous system, and the cortex of the adrenals all being involved.

From the point of view of therapy the most efficient treatment is the application of heat. The patient is put in a hot bath in which the temperature is slowly raised from 35 degrees centigrade to 39 degrees centigrade. If restlessness becomes evident, the treatment is interrupted. Dr Friedemann has found this method very effective in the first and third stage circulatory failure but of no use in the second stage.

#### BOSTON MEDICAL HISTORY CLUB

The Boston Medical History Club met Monday evening December 17 in Sprague Hall of the Boston Medical Library. Dr Henry R. Vlets opened the meeting and commented on the recent death in Paris of Stephen D'Isay an authority on medical history whose latest publication was "Histoire des Universités."

Mr James F. Ballard presented an impressive array of books and manuscripts written between 1500 and 1600 belonging to the Boston Medical Library. Mr Ballard discussed each book in turn commenting on the author, the contents, and the nature of the material on which the book was written or printed. The early manuscripts were copied by monks and vellum was used exclusively. A little later paper began to replace the vellum and with the advent of the printing press after the middle of the fifteenth century books began to be produced in quantities. Toward the end of this period wood-

cuts began to appear, and many of the publications owe their fame to some particular illustration

#### SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the Headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, January 15, 1935, 12 noon. The speaker will be Louis M Spear, M.D., Physician-in-Chief, Robert B Brigham Hospital. His subject will be "Chronic Arthritis." All physicians are invited to attend both lecture and luncheon.

#### NEW ENGLAND PHYSICAL THERAPY SOCIETY

Evans Memorial Auditorium, 80 East Concord Street, Boston, January 16, 1935, at 8 P.M.

##### *Second Lecture on Electricity*

By Dr L L Campbell

##### A Some Effects Produced by Electric Currents

- 1 Thermal effects due to direct currents
- 2 Thermal effects due to alternating currents
- 3 Chemical effects electrolysis, iontophoresis cataphoresis
- 4 Electromagnetic effects motor generator, transformer, condenser, spark gap, etc

##### B The Physics of Some Electrotherapy Apparatus

- 1 Apparatus for galvanism, direct and sinusoidal currents
- 2 Diathermy apparatus, the electrode and the inductotherm types

Physicians and medical students are cordially invited to attend

ARTHUR H RING, M.D., Secretary

Arlington

#### HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) Tuesday evening, January 8 at 8 15 P.M.

##### PROGRAM

"Forty Years of Diabetes" with Presentation of Cases By Dr Elliott P Joslin

MARSHALL N FULTON, M.D., Secretary

#### WILLIAM HARVEY SOCIETY

The next meeting of the William Harvey Society will be held January 11 in the Auditorium of the Beth Israel Hospital, Boston, at 8 00 P.M.

##### PROGRAM

Speaker Dr Charles F McKhann, Children's Hospital.

Subject 'Immune Substances in Placental Extract'

Chairman Dr Edwin H Place, Professor of Clinical Pediatrics, Tufts College Medical School.

#### CLINIC AT THE CHILDREN'S HOSPITAL

A clinic at which orthopedic, medical and surgical cases are to be presented will be held on Monday, January 7, at 4 00 P.M. in the Amphitheatre of the Children's Hospital, Boston

#### SOCIETY MEETINGS CONGRESSES AND CONFERENCES

#### CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, JANUARY 7, 1935

Monday, January 7—

- 9 A.M. Boston Surgical Society, New England Deaconess Hospital
- 14 P.M. Pediatric Clinic Children's Hospital Amphitheatre
- 8 15 P.M. New England Heart Association Peter Bent Brigham Hospital Amphitheatre

Tuesday, January 8—

- t 2 30-4 P.M. Ward Visit (Pediatrics), Massachusetts Eye and Ear Infirmary
- t 4-5 P.M. Seminar Pediatrics, Massachusetts General Hospital, Pediatric Laboratory
- \*8 15 P.M. Harvard Medical Society, Peter Bent Brigham Hospital Amphitheatre

Thursday, January 10—

- \*12 M Clinico-Pathological Conference, Massachusetts General Hospital
- t 12 M Clinico-Pathological Conference, Children's Hospital
- \*3 30 P.M. Medical Clinic. Dr Christian, Peter Bent Brigham Hospital
- t 4 30 P.M. Surgical Clinic Peter Bent Brigham Hospital.

Friday, January 11—

- 8 P.M. William Harvey Society, Beth Israel Hospital

Saturday, January 12—

- \*10-12 Medical Staff Rounds, Dr Christian, Peter Bent Brigham Hospital

\*Open to the medical profession

tOpen to Fellows of the Massachusetts Medical Society

January 7—New England Heart Association will meet at the Peter Bent Brigham Hospital at 8 15 P.M. For details address the Secretary, Dr James M Faulkner, 284 Beacon Street, Boston, Mass

January 7—Clinic at the Children's Hospital See notice above

January 8—Harvard Medical Society See notice elsewhere on this page

#### MASSACHUSETTS DIETETIC ASSOCIATION

January 8—Tuesday, 8 P.M. "Careers and Natural Abilities," Professor Johnson O'Connor, Human Engineering Laboratory, Stevens Institute of Technology, Hoboken, N.J.

February 12—Tuesday, 8 P.M. "Diabetic Children," Dr Priscilla White, Joslin Diabetic Unit

March 12—Tuesday, 8 P.M. "The Effect of Diet on Anemia," Dr Lewis Diamond Instructor in Medicine Harvard University Medical School, Associate Physician, Children's Hospital

March 19—Tuesday, 2 P.M. Field Trip Visit Storehouse First National Stores

April 9—Tuesday 8 P.M. "Small Hospital Problems," Miss Margaret Copeland, Superintendent, Free Hospital for Women

January 10—Clinic at the Peter Bent Brigham Hospital See page 35

January 11—William Harvey Society See notice elsewhere on this page

January 14 - February 25—Lectures and Clinics on Heart Disease by Dr Christian See page 35

January 15—South End Medical Club See notice elsewhere on this page

January 16—New England Physical Therapy Society See notice elsewhere on this page

April 29 May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr E. R. Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia Pa.

June, 1935—Medical Library Association will meet in Rochester, N.Y. For details address the Secretary Miss Frances N.A. Whitman Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass

**DISTRICT MEDICAL SOCIETIES****ESSEX NORTH DISTRICT MEDICAL SOCIETY**

The Semi Annual Meeting will be held in January and the Annual Meeting in May time, place and subject to be announced.

E S BAGNALL M.D. Secretary

**FRANKLIN DISTRICT MEDICAL SOCIETY**

Meetings will be held on the second Tuesday of January, March, and May at the Weldon Hotel Greenfield, Mass.

CHARLES MOLINE M.D. Secretary

Sunderland.

**MIDDLESEX EAST DISTRICT MEDICAL SOCIETY**

January 9, 1935—Melrose.

March 13, 1935—Wakefield.

May 8, 1935—Winchester

K. L. MACLACHLAN M.D. Secretary  
1 Bellevue Street, Melrose.

**PLYMOUTH DISTRICT MEDICAL SOCIETY**

January—Goddard Hospital.

March—Plymouth County Hospital.

April—Lakeville Sanatorium.

**SUFFOLK DISTRICT MEDICAL SOCIETY**

January 23, 1935—General Meeting in association with the Boston Medical Library Speaker and subject to be announced later

March 27, 1935—Clinical Meeting at the Boston Lying In Hospital.

April 24, 1935—Clinical Meeting at the Children's Hospital.

The medical profession is cordially invited to attend all of these meetings.

ROBERT L. DeNORMANDIE, M.D. President.  
GEORGE P. REYNOLDS, M.D. Secretary  
HENRY T. HUTCHINS, M.D. Boston Medical Library

**WORCESTER DISTRICT MEDICAL SOCIETY**

January 9, 1935—Wednesday evening Worcester City Hospital Worcester Mass. 6:30 P.M. Buffet supper 7:30 P.M. Scientific program and business session. Buffet supper complimentary by the Hospital.

February 13, 1935—Wednesday evening Worcester State Hospital Worcester Mass. 6:30 P.M. Dinner 7:30 P.M. Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

March 13, 1935—Wednesday evening The Memorial Hospital Worcester Mass. 6:30 P.M. Buffet supper 7:30 P.M. Scientific program and business session. An announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10, 1935—Wednesday evening Worcester Hahnemann Hospital, Worcester Mass. 6:30 P.M. Dinner 7:30 P.M. Scientific program and business session. An announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening An annual Meeting of the Worcester District Medical Society. The time and place of this meeting will be announced later

ERWIN C. MILLER, M.D. Secretary

27 Elm Street Worcester

**BOOKS RECEIVED FOR REVIEW**

To Remind A Biological Essay The Abraham Flexner Lectures Series Number Two. By Sir William Hale Hardy 45 pp Baltimore The Williams & Wilkins Company

The Principles of Therapeutics. The Abraham Flexner Lectures Series Number Three By Francis Richard Fraser 135 pp Baltimore The Williams & Wilkins Company

Minor Surgery in General Practice By W Travis Gibb 470 pp New York Paul B. Hoeber, Inc. \$5.00

Marriage and Sexual Harmony By Oliver M. But-

terfield 40 pp New York Emerson Books Inc. \$5.00

Clinical Pathology of the Jaws With a Histologic and Roentgen Study of Practical Cases. By Kurt H. Thoma. 643 pp. Baltimore and Springfield Charles C Thomas \$9.00

Mental Health, Past, Present, and Future. The Colver Lectures, 1932. By Arthur Hiller Ruggles. 104 pp Baltimore The Williams & Wilkins Company

Definite Diagnosis in General Practice. By W L Kitchens 1000 pp Philadelphia and London W B Saunders Company \$10.00

A Textbook of Pathology for Nurses. By Coleman B. Rubin. 243 pp with 61 illustrations. Philadelphia and London W B Saunders Company \$1.75

Manual of Clinical Laboratory Methods. By Pauline S. Dimmitt. 156 pp Illustrated. Philadelphia F A Davis Company \$2.00

The Heart Visible. By J Polevski. 207 pp Philadelphia F A Davis Company \$5.00

The Equilibrated Salt Diet. By Robert Wollheim and Walter H Schauinsland. 64 pp New York Professional Scientific Service.

Osteomyelitis. Its Pathogenesis, Symptomatology and Treatment. By Abraham O Wilensky 464 pp New York The Macmillan Company \$9.00

Medical Art Calendar 1935 J Philip Kruseman. The Hague. \$1.75

Traité Élémentaire D Exploration Clinique Médicale. (Technique et Séméiologie) Par Emile Sergeant et al 1176 pp Paris Masson et Cie Broché 120 fr. Cartonné tole 145 fr

Gynecology By Brooke M Anspach. Fifth Edition. With the assistance of Phillip F Williams and Lewis C. Scheffey \$32 pp Philadelphia and London J B Lippincott Company \$9.00

**BOOK REVIEWS**

Institutional Care of Mental Patients in the United States. By John Maurice Grimes 138 pp Privately published. Chicago, 1934 Price \$3.00

This book consists of a privately printed report which grew out of an investigation made by the author for the American Medical Association. This investigation was started by a resolution passed in June 1930 with the idea of surveying all hospitals caring for mental patients in the United States, both public and private. The author with one or two colleagues carried out this work systematically partly by the method of questionnaires and partly by personal visits. Of the 631 institutions considered, seventy five per cent of the superintendents responded to the questionnaires and some member of the investigating board made personal visits to 600 of the hospitals. The expenses of this work were defrayed by appropriations from the American Medical Association. A brief preliminary report was given in 1933 but the author states that no extended report was ever made and the results of the investigation

gation were partially suppressed. He now has taken it upon himself to give the report in detail and send it out to various interested persons as a private publication.

The report is divided into three parts, the first concerning publicly controlled institutions. Of these there are 251 state institutions, 174 of which are for the insane and 65 for the mentally deficient. The others are for epileptics and drug addicts. Many details are given of these hospitals, both in regard to their location, their equipment, the medical personnel, technical staff, social service, etc. In general, the author feels that the medical personnel of most state hospitals is inadequate and the good men are always too few and too busy. For the most part, the federal institutions are newer and much better equipped and provided for financially than the older state institutions. The second part of the report deals with private hospitals. The author found these on a relatively high plane and most of them could justly be called hospitals, where definite therapy was given and in which the primary function was not merely custodial care. The third part of the book takes up special considerations, such as social and medical care. He believes that most of the state hospitals lack an adequate staff of social workers, that the medical care is so curtailed that in most instances it is unfair to speak of the state institutions as hospitals, and finally, that the financial support is so meagre that honest effort by the physicians cannot be given under existing circumstances. After this thorough study, the author feels that the solution of the mental patient problem is not merely additional money, but that more adequate care, and particularly better medical attention should reduce the number of patients in institutions to such an extent that the financial burden of caring for them should be even less than it is to-day. The whole medical staff should be concentrated on the problem of de-institutionalization, with the definite aim of paroling all parolable patients. Secondly, the parole service should be under competent medical direction, and thirdly, more definite 'acute' service should be arranged for in these hospitals so that the last vestiges of the old insane asylum should disappear. The final step will be the redisposition of the "chronic" service, under economic and sociological direction with medical supervision. The book is completed by a very carefully compiled table of all the hospitals in this country and a number of useful maps.

Although one cannot comment upon the controversy which the author has had with the American Medical Association, one feels that this report is of considerable value. The facts appear to be accurately given and the deductions broadminded and sane. To all physicians and others who have under their care the half-million cases of mental disease in this country now in institutions, this book is recommended as one that should lead to a reconsideration of the whole problem. The personal bias of the

author has only slightly interfered with the worth of his publication.

**Tumors of the Female Pelvic Organs.** By Joe Vincent Meigs, with a foreword by Robert B. Greenough. 261 illustrations. 533 pp. New York. The Macmillan Company. \$6.00

It is well that we have correlated and brought to our attention more frequently, certain pathological groups with their clinical manifestations and the results of our present methods of treatment. Too often we have the pathology of a group of cases most thoroughly presented, with but scanty mention of the clinical and therapeutic aspects—and, on the other hand, clinical details and methods of treatment with merely the names of the pathological material treated. It is a pleasure to find a book such as Dr. Meigs has just written, covering a specific pathological group and telling in clear language what the clinical manifestations, treatments and results are for this particular group.

"Tumors of the Female Pelvic Organs" is, as is stated in the preface, a survey and as such, is of great value. It necessarily includes many statistics, both of cases from the wealth of material from the Massachusetts General Hospital and from other clinics. These statistics are so clearly presented that there is no confusion and one can easily find out what is the consensus concerning treatment. This is of real value.

The illustrations, which are abundant, are most excellent, especially the photomicrographs. The chapter on metastases is valuable. The text is clear and all viewpoints in regard to treatment are presented and the results of each summarized and evaluated. For the student and the surgeon who wish to know the present status of the pathology and treatment of pelvic tumors, no clearer presentation could be asked for.

**Conception Period of Women.** By Kyusaku Ogino. 95 pp. Harrisburg, Pa., Medical Arts Publishing Company. \$1.00

Since the war there have been great advances in our knowledge of physiology and reproduction. It is during this same period that there has been a great increase in the interest shown in contraceptive methods and technique. Our ideas of the physiology of conception have undergone merely as great changes as have our ideas in regard to such other branches of this subject as the importance of the hormones, or the physiology of menstruation. Within the last year or two we have been hearing a good deal of a new contraceptive method based upon this newer knowledge of the female reproductive physiology. Popular books have appeared, notably 'The Rhythm' by Leo J. Latz, M.D. There has been a great deal of assertion without very much of fact to substantiate it. With the appearance of a new popular book 'Conception Period of Women' by Dr.

Kyusaku Ogino it seemed wise to find out what real scientific evidence could be found for the claims which have been made for the new method.

The method as advocated by Ogino is in brief as follows. In the first place the method is useful only for women whose menstrual cycles are quite regular. Provided that a woman has found this to be the case she is to count back on her calendar eleven days from the date of her expected menstruation. These eleven days constitute the so-called safe period. Preceding them there is a dangerous period of eight days and preceding this a relatively short stretch of time to the end of menstruation. This last relatively safe period may be obliterated if the cycle is less than twenty-one days or of considerable duration if the cycle is more than twenty-eight days. The invariable rule is that all periods must be reckoned not in days after the beginning of menstruation but in days preceding an expected one. The dangerous eight days are arrived at by allowing for some variation in the time of ovulation for the individual woman, for the life of the egg which probably does not exceed one or two days and for the length of time during which spermatozoa retain their ability to fertilize probably not more than three days.

Ogino's book consists of seven chapters, a bibliography which is very complete and an appendix consisting of a reprint of an article appearing in the June, 1933 issue of *Surgery Gynecology and Obstetrics* on this same subject by Dr. A. G. Miller and his associates of the Miller Clinic in Hobart, Indiana. The appendix, the chapter on the period of ovulation, and those on the life of the ovum and the life of the spermatozoa give a very comprehensive review of all the scientific evidence bearing on these subjects. Chapter V brings forth the author's arguments bearing on the period of human conception. The last three chapters deal with the practical application of this theory and are written in a more popular vein.

The original German papers of Siegel and Nürnberger who reported on the conception time of German women during the war seemed to show a period of maximum fertility for the whole week following menstruation which was succeeded by a period of relative sterility until the next menstruation appeared. Capellmann and Niedermeyer based their theories upon this work but a careful appraisal of it would indicate that the statistics were very carelessly gathered and are not at all reliable. Ogino quotes papers of his own appearing in Japanese publications as early as 1913. His first article in German was in 1930. Before that time Knaus published an important article in the *Zentralblatt für Gynäkologie* in 1929 on a new method for determining the end of ovulation. This paper reviewed his previous work with animals and reported thirty-six cases in which the method had been tried with human beings. As a result he was able to say that ovulation occurred during the dangerous period noted above and to base

on this a theory of conception control. These theories of Ogino and Knaus have been widely circulated on the Continent particularly by a Dutchman named Smulders. The latter has published a book based on the so-called law of Ogino-Knaus. In this country scattered articles have appeared the most scientific being that of Miller already referred to and there is the book of Latz which is an entirely popular presentation and appears with ecclesiastical approbation.

After reading Ogino Knaus and the other sources as published in the German and after checking all the original evidence adduced by Ogino from operations personal cases, etc. one cannot help being impressed with the reasonableness of the theory one might almost say the probability of its correctness. But when one looks for controlled series of human statistics one cannot help being disappointed. To date the article by Miller covering data regarding eighty-seven couples with some 700 copulations and the cases reported by Ogino of six couples using this method for an aggregate of 142 months and 300 copulations, together with a few scattered reports in the literature are about all we have to go on. Ogino claims after collecting these scattered cases and the ones mentioned above to have found 500 cases for his theory and very few against it.

The situation then at the present time may be summarized as being still in the stage of theory. It is true that this theory coincides with our present knowledge of physiology much more completely than the one which makes conception possible at any time in the menstrual cycle but it is also true that before giving advice to medically sick patients in whom pregnancy would be dangerous to life or even somewhat harmful to health we have got to have a great deal more carefully controlled evidence from human matings than is at present available.

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Developmental Anatomy A Text Book and Laboratory Manual of Embryology By Leslie Brulinard Arey Third Edition Revised. With 547 illustrations many in colors 593 pp Philadelphia and London W. B. Saunders Company \$6.50

This new edition of a familiar textbook on embryology comes just four years after the publication of the last one. Because of its inclusiveness a review of the literature with a corresponding revision of the former text represents a very considerable task for the author.

Those who have used a previous edition as a reference or study book will remember how well it combined scientific accuracy with a lucid and interesting style. One has only to read the chapters on the complicated development of the urogenital organs to see how expertly Dr. Arey handles his materials, using text with diagrams to unfold a logical sequence in development. A very fine feature is a table giving the stages of development of practically all the parts of the body at different periods and the student of embryology will especially appreciate

the superscripts directing the reader to original sources Men in every field of medicine will find this a handy reference when particular facts of embryology are desired

This edition, in common with those previously published, contains a laboratory manual The workmanship of the book is excellent.

**Obstetric Medicine** Edited by Fred L Adair and Edward J Stieglitz 743 pp Philadelphia Lea and Febiger \$8 00

This book is a series of articles by 39 contributors, edited by Drs Adair and Stieglitz In their introduction the editors state that they have chosen only the more common and important of the medical conditions for presentation, and that they tried to impress upon the contributors the idea that each chapter should be concise, definite, and should not be a theoretical exposition of the subject

In the first section, under "General Considerations," the physiology of normal pregnancy, physical diagnosis in pregnancy, pharmacology and fetal disturbances are covered interestingly and well

Section II includes the "Specific Infectious Diseases" The chapter on "Tuberculosis" is excellent, and it ends with a full bibliography The chapter on "Syphilis" is as the writer describes the disease, "a florid generalization" It lacks specific details of treatment, and there is no bibliography The chapter on "Venereal Diseases" is excellent, full of specific treatment and conservative advice That on "Contagious Diseases" is short and contains nothing that is of great help in their relation to obstetrics The chapter on "Tropical Diseases" and that on "Parasitic Diseases" are interesting

Section III contains chapters on "Non-Infectious Diseases," the outstanding one being that on "Deficiency Diseases"

Section IV is on "Disorders of the Nervous System" and Section V is on "Disorders of the Respiratory Tract."

Section VI takes up "Disorders of the Circulatory System," and under "Diseases of the Heart" the various types of cardiac disturbances are carefully discussed The section does not leave the reader with a clear idea of the treatment and management of obstetric cases with heart complications

In Section VII "Disorders of the Alimentary Tract" are taken up, and there is a routine discussion of the various conditions and complications that come in these diseases

Following this are sections on "Disorders of the Urinary System," "Endocrine Balance," "Blood," "Body Mechanics," and the book ends with a chapter on "Diseases of the Skin"

They are all satisfactory articles on the diseases studied They vary greatly in their bearing on obstetrics Much in the chapters could be entirely eliminated and left to books on medicine In some of these chapters there is no bibliography, and the treatment suggested is not specific As is to be ex-

pected in a book with so many contributors, there are many statements that do not coincide Some are completely contradictory The book contains a mass of interesting material It does, however, lack specific details in the treatment of many conditions considered, which the editors lead us to suppose would be given.

**The Surgical Clinics of North America** August, 1934 Volume 14—Number 4 Chicago Number 288 pp Philadelphia and London W B Saunders Company Per clinic year February, 1934 to December, 1934 Paper, \$12 00, Cloth, \$16 00

This issue opens with an excellent symposium on plastic surgery, an important subject that has received relatively little recent attention Moorehead illustrates the value of elastic traction to close rather large defects by the use of adjacent tissues This simple principle is worthy of much more general use Koch describes the various methods available for the correction of burn contractures of the axilla, more particularly the Z incision, pedunculated flaps, and split grafts C and W C Beck report the successful grafting of toes to fingers and also describe their operation of plastic correction of the pendulous breast J C Beck and Guttman report a case illustrating the use of the tube graft to cover a large facial defect An unusual type of plastic repair of hypospadias is described by Gatewood He makes a circular "umbrella" flap about the opening, inverts it, and transplants it distally

Friends of the late Dr Carl A Hedblom will be interested in his clinic given with Van Hazel on the surgical treatment of tuberculosis His cases illustrate apical thoracoplasty for residual cavity, extra-pleural thoracoplasty for tuberculous empyema, inadequate pneumothorax with recurrent effusion treated by posterior thoracoplasty with upper stage anterolateral resection, extensive chronic tuberculosis with dextrocardia with satisfactory result following a three stage extrapleural thoracoplasty, and open thoracoplasty for adhesions followed by partial extra-pleural thoracoplasty

Another noteworthy group of clinics is in the nature of a symposium on peptic ulcer with Bevan discussing the surgical aspects, Brown the medical treatment, and Rose the roentgenological features

These with many other valuable contributions make this an outstanding number

**Postures and Practices During Labor Among Primitive Peoples.** By Julius Jarcho 175 pp With 130 Illustrations New York Paul B Hoeber, Inc \$3 50

The author has obviously spent much time investigating the curious and terrible customs in obstetrics that have prevailed in various countries in ancient and modern times It is distinctly worth while to have an account of these customs grouped in one book where they are readily available to the student of obstetrical history

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## NEW ENGLAND SURGICAL SOCIETY

Dr. ERNEST L. HUNT Worcester Mass. Mr President and Fellow Members—I function in this chiefly to ask the favor of your attention to one of my young colleagues, Dr O'Meara. The work is all his. I can claim nothing except having some years ago been instrumental in organizing a service which has given him his opportunity

Dr O'Meara's work, I think, is highly original, and presents a method which I hope will command itself to my colleagues of this Society and I am

sure will invite their criticisms. I take pleasure in presenting to you Dr John W O'Meara, of Worcester

Dr. JOHN W O'MEARA I have a short movie which I think can be shown while I am reading the paper. It shows the present range of activity of eight of the patients who have been treated by the method that I am about to describe. I won't refer to it. The title shows the number of months after operation when the movie was taken.

## FRACTURES OF THE FEMORAL NECK TREATED BY BLIND NAILING\*

BY JOHN W O'MEARA, M.D. †

WHEN the American Orthopedic Association in 1928 appointed a commission to study the end results of unimpacted intracapsular fractures of the neck of the femur it found, among patients treated almost entirely by closed methods, usually Whitman's, 30 per cent bony union in 201 patients over sixty years of age, roughly one out of three, and 52 per cent bony union in 365 patients under sixty years of age, roughly one out of two! A large majority of these injuries occur in persons over sixty.

This was a disinterested analysis of the work of others and probably represents average end results obtained, though numerous surgeons, writing of their own work, have reported better. Whitman never reported his end results. We are making a study, not yet complete, of our cases and believe results have been no better and probably not so good.

We think bony union should not be reported as an end result without x ray confirmation. Clinical examination and the patient's judgment are unreliable.

### WHITMAN METHOD

We have long suspected that the reason one fractured hip treated by Whitman's method united and the next, apparently similar, did not, was that the first was reduced and the second was not. We think a valid objection to Whitman's method is that lateral x ray confirmation of reduction cannot be had through plaster. We have proved often that what appeared to be perfect reduction in anteroposterior

view was most imperfect in lateral. If plaster is to be used accuracy of reduction should be checked by x ray in two planes before it is applied. Where suitable x ray equipment is available, there is no excuse for keeping a patient in spica for three months or more with fragments in such position that nonunion is practically inevitable.

There are other well known objectionable features, the three to six months' period of immobilization, hypostatic congestion, bed sores, stiff knees, atrophied muscles, long, slow convalescence. Several pulmonary infarcts we have seen were thought to be associated with frequent turning of patients in spicas.

### SMITH PETERSEN METHOD

Smith Petersen's freshened interest in internal fixation by introducing in 1931 a three-flanged

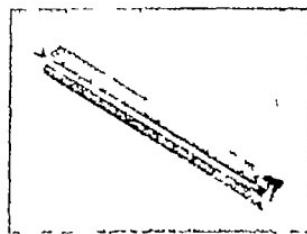


ILLUSTRATION 1 Smith Petersen three flanged nail.

nail which he had then been using for five years. He exposed the fracture through a wide incision. We tried this method in six cases and found it a formidable surgical procedure, requiring an hour and more on the operating table. We thought many of our patients too

\*Read at the Annual Meeting of the New England Surgical Society at Burlington, Vermont, September 3, 1934.

†O'Meara, John W.—Senior Orthopedic Surgeon, Worcester City Hospital. For record and address of author see "This Week's Issue" page 78.

old and feeble for this type of surgery and sought to work out a simpler technique

#### "BLIND NAILING"

Twelve hip fractures, treated by a method new to us, form the basis of this report. Eleven were transcervical, one a fracture at the base of the neck. The first case was done in December, 1933, six more in January, 1934, the remainder since. Seven nails have already been removed.

We make no specific acknowledgment of assistance to workers or writers elsewhere, except to Smith-Petersen for the nail. We had done seven cases before we first became aware that others, notably Wescott<sup>3</sup> in Virginia, Johansson<sup>4, 5</sup> in Sweden and King<sup>6</sup> in Australia were working along similar lines. They have recently published their methods. The object of each has been to place the nail accurately through a small external lateral incision, rather than by exposing the fracture as done by Smith-Petersen. Each has gone about this in a different way. Wescott makes determinations by x-ray study of the well hip. Johansson and King use a perforated nail threaded on a direction finding guide wire.

Essential points in our method are as follows:

- (1) To accurately reduce the fracture, checking reduction by x-ray in two planes
- (2) To maintain apposition by internal fixation with Smith-Petersen's three-flanged nail, inserted through a small lateral incision

#### PRELIMINARY X-RAY INVESTIGATION

When a patient with a fractured hip enters the hospital, the usual procedure is to turn him over to a technician who radiographs the hip as he finds it, with the thigh in helpless eversion. Not uncommonly the roentgenologist reports on this film only, that the fracture is impacted. We know he has no right to draw such a conclusion from a single film. There is often so much foreshortening of the neck and dropping posteriorly of the trochanter that it is difficult to determine exactly, even the level and extent of fracture. Primary x-ray examination should therefore include an anteroposterior view with the thigh internally rotated to make visible the entire femoral neck, and a lateral view to check the position in that plane.

If then, the fracture is found definitely impacted in good position in both views, certainly no manipulation is necessary, possibly no fixation, though we think it safest to proceed with fixation.

If the first film shows the fracture to be obviously loose, there is no need of taking a second until the patient is in the surgery under anesthesia.

#### REDUCTION OF FRACTURE

When it is determined that the fracture is either loose or as often happens that the lateral film shows marginal impaction in malposition, we proceed with manipulative reduction under anesthesia. We have used ether or spinal with satisfaction.

Manipulation consists of the following manoeuvres in the case of a loose fracture or one impacted in malposition. Impaction is broken up by lateral traction applied through a sheet encircling the thigh. A strong pull distally obtains length, the thigh is then flexed to right angle, lifted strongly forward and internally rotated maintaining flexion. It is then extended, maintaining internal rotation. Abduction is not stressed.

A tape is helpful because if shortening persists we know without x-ray that reduction is incomplete and manipulation is repeated. When measurement shows full length of the leg, the result is checked by anteroposterior and lateral x-rays.

While these films are being developed the patient is prepared and the surgeon scrubs, the leg meantime being held by an assistant. We tried fixing both extremities to foot pieces of the fracture table but found it unsatisfactory because the perineal post of the table interfered with lateral x-rays.

#### DIRECTION FINDING

The angle at which the nail is to be inserted and its length are determined from the anteroposterior film with a protractor and metal tape.

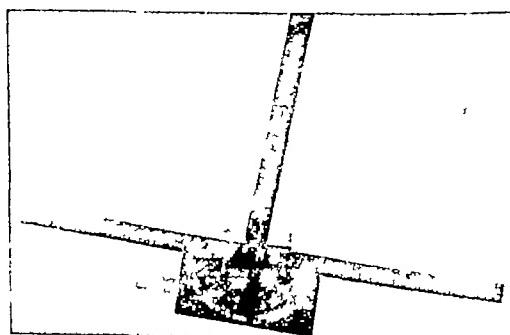


ILLUSTRATION 2 Protractor

The angle is usually 130 to 135 degrees, and the length three and one-half to four and one-half inches.

When the angle is determined, the protractor is set at that angle and laid on drapes above the hip as a guide. The nail is to be inserted under it. We appreciate that this is not mathematically accurate, but it is simple and we believe our results show that it answers the purpose. It is more important to reduce the fracture accurately than to drive the nail through the dead centre of the head.

The forward angle of the neck is the remaining consideration. We have managed this quite simply also.

We made a number of lateral x rays of normal hips in various degrees of rotation. We found that when the thigh was at the limit of internal rotation the femoral neck was flattened and parallel to the table on which the patient was lying, care being exercised to see that the pelvis was flat. Muscles posterior to the hip joint do not permit greater rotation than this.

Accordingly we hold the extremity in full internal rotation, confident that the forward angle is eliminated and the neck is flat, and insert the nail on the line parallel to the table.

#### OPERATION

A three to four inch lateral incision extends distally from the great trochanter and into the femur. The protractor indicates point at which the nail should be started, usually an inch below the junction of the trochanter and shaft. We use Smith Petersen's starter to break through the cortex. This is withdrawn and the nail entered and driven in halfway. We then repeat the x ray to check the direction in both views. If satisfactory, the nail is driven home and the fracture impacted. If the direction needs changing it is easier to withdraw the nail after insertion halfway than after it has been driven home. If halfway films show a satisfactory position in both views it is not necessary except for record, to make further films after the nail has been driven home. We usually defer this. The wound is closed and the patient returned to bed in a Thomas splint with five pounds' skin traction.

#### POSTOPERATIVE CARE

The splint is kept on three to four weeks after which freedom of motion in bed is gradually allowed, then in a wheelchair, then on crutches without weight-bearing. We prefer to have the patient able to move the hip and knee joint quite freely before allowing him from bed. Weight-bearing without crutches was begun at varying times by two patients at two months, four at three months, two at four months, one at seven months. One patient died, and two others are recent. We have used no walking calipers.

#### REMOVAL OF NAIL

This has been done after six months. It is loose then and probably of no further use. In one instance it had begun to slip out.

#### LATERAL X RAYS

The method of making lateral x rays deserves a word. We have tried the curved cassette but prefer another method which requires no special equipment.

The patient may be supine or lying on the affected side. The film is on the outer side of the affected hip with the upper end tipped into the loin as far as possible. The well leg is lifted forward. The tube is on the inner side of the thigh so placed that the central ray is at right angle to the femoral neck. Usually this means at the knee level. Slight adduction helps to bring the neck into view below the upper margin of the acetabulum. Most films made in this way have been sufficiently good to give us the information desired.

#### SELECTION OF CASES

All recent intracapsular fractures seen in this period have had this type of treatment, except six.

- 1 General paretic, aged fifty-one, pathological fracture Death on tenth day
- 2 Arteriosclerotic alcoholic, aged seventy-nine. Death on twenty fourth day
- 3 Diabetic, senile dementia, aged seventy-six. Death on nineteenth day
- 4 Senile dementia, violent, resistive, aged seventy-six. Transferred to the State Hospital on fifth day
- 5 Senile dementia, aged seventy-eight to the State Hospital on nineteenth day
- 6 Fragile lady who fractured her hip on her ninetieth birthday

We do not consider the method suitable for old ununited fractures with absorption of the neck.

#### REVIEW OF TWELVE CASES

Average age sixty-eight, youngest fifty-five, oldest seventy seven. No mortality from the injury or treatment. One died of bladder cancer.

No complications such as surgical shock, wound infection or pulmonary pathology. Two were admitted with bed sores, one after a month of home treatment, another after sixteen days in a spica.

The nail was misdirected in four early cases during a period when the x ray equipment was disabled. In each instance it penetrated the head too far in front. One of these required withdrawal and reinsertion. This is an avoidable error of technique.

Nine patients are up and about, bearing weight freely but with one of these still using crutches part of the time. Four have returned to work, as librarian, janitor, housewife and truck driver after three, four, five and seven months respectively. Five were unemployed before the accident and continue to be. Three of these still need help with shoes, and stockings, but are otherwise independent. Seven, whose nails are out, have bony union by x ray.

One patient, with bladder cancer incontinent in spica for sixteen days was nailed to dispensary



ILLUSTRATION 3 Case 1. Loose intracapsular fracture.



ILLUSTRATION 4 Case 1 A. P.  
view Fracture reduced and nailed.

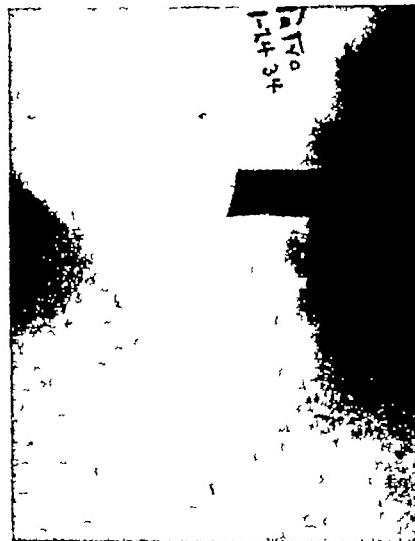


ILLUSTRATION 5 Case 1. Lateral  
view Fracture reduced and nailed.



ILLUSTRATION 6 Case 1 A. P.  
view Nail out. Bony union after six  
months



ILLUSTRATION 7 Case 1 Lateral  
view Nail out. Bony union after six  
months



ILLUSTRATIONS 8 and 9 Group of twelve hip fractures,  
reduced and nailed.

with spica, facilitate nursing and permit radiation of the bladder. She died a month later, of cancer. The fracture was in excellent position by x-ray.

Two recent patients have not yet become active. One is doing well. The second, ill-chosen, we expect to be a failure. He is a male, aged seventy-two, with right hemiplegia of one year's duration, who fractured his right hip and was admitted to the hospital from the Home Farm, in poor condition. Recovery was not expected and a Thomas splint and skin traction were used for comfort only. His condition improved and nailing was done, believing that if he did not unite he would occupy a City Hospital bed indefinitely. Excellent position was obtained but check-up x-ray after two months showed the nail not holding and the fragments separating. We ascribed this to bone softening from a year's disuse following cerebral hemorrhage. Nailing should not have been attempted.

#### GENERAL COMMENT

There is no more danger of interference from interposed soft tissue than in other closed reductions.

After-care is more comfortable for the patient, and easier for the nurse. The treatment period and disability are materially shortened. The saving in hospital days is substantial. Five patients who had homes to go to required a month each in the hospital. Welfare and rooming-house cases needed longer hospital care.

The results to date indicate that objection to foreign material for internal fixation is invalid in respect to Smith-Petersen's three-flanged nail.

The family history of one patient indicates improvement of the present over the past handling of these cases. At seventy-four, her mother fractured her hip and died after eighteen months in bed. At forty-six her grandmother broke one hip which healed with shortening and a stiff knee. At seventy she broke the other and died at eighty-three after twelve and a half years in bed. Our patient returned to work as a librarian in three months.

#### CONCLUSIONS

Results of treatment of loose intracapsular hip fractures by Whitman's method of closed reduction, after thirty years' trial, do not warrant its unquestioned acceptance. If still preferred over operative methods, lateral as well as anteroposterior x-ray should be employed to check the reduction before encasing the patient in plaster.

Methods of internal fixation are being tried.

A simple method of internal fixation by blind nailing is described. It has been used in twelve cases. Results to date have been highly satisfactory to us when compared with those we obtained by other methods.

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#### DISCUSSION

DR. FREDERIC J. COTTON, Boston, Mass. *Mr President, Ladies and Gentlemen*—It seems to me that this is an admirable piece of work of very definite importance. I am going back a bit, if you don't mind, in relation to hip fractures. It is a year ago now, almost to a day, when I made a statement that I thought we were going to have to revamp the whole of our estimate of the treatment of hip fractures and methods in view of greater knowledge.

For thirty years men have been working, trying to do something with hip fractures. During that time, as I have watched it, there has been a very great improvement in methods, and a great deal of improvement in end results. The old results, we all know, were very lamentable, but at the same time, the work of those last years has not been satisfactory.

We didn't have proper x-rays. We didn't know our mechanical pathology so accurately as we should have. We gradually learned that what had been previously taken for impacted hips, were not, as a rule, impacted hips at all, but hips entangled, simply with a spike of the neck in contact with the head, hips which very often weren't entangled but simply presented views of a foreshortening, giving a false impression of the whole hip. Therefore, gradually one man after another came to reducing the apparent impactions, though the majority were treated on the idea that a certain position would promote and secure a healing of the hip.

You cannot, simply by adducting a hip, insure that it will get a bony union.

A contribution which has not been properly evaluated was made by the late Dr Peckham, of Providence, who being an admirable mechanic, realized that the important thing in maintaining reduction was internal rotation rather than abduction. He talked that in and out of season. His contribution has never been sufficiently recognized.

We came to recognize, however, one after another, that that was the important thing, and that abduction, while it had its place, wasn't so important. Only lately, since we have had proper lateral x-rays (and I don't care whether they are made with the curved cassette or any other way, as long as you get them) have we realized that there is a certain constancy to the lesion and the displacement in these intracapsular fractures with constant rotation out of contact with the broken surface of the head.

We have learned that they were not impacted and were in bad position and should be reduced. We have learned how to reduce them. I don't think there is much argument about that. Small details in the matter of reduction are not important. Personally, I add an adduction factor in the reduction. I think it is easier. It doesn't make much difference.

It is the same pattern put on record by Leadbetter a year ago, and the same thing that Dr O'Meara has been doing here in all essentials.

A year ago I said that our problem I thought, was going to be one of determining conditions so that after getting proper position, which we can now do, we could maintain contact and obtain repair.

The hips that have gone wrong in the past have been those that were either not properly reduced or that underwent a curious absorption which is so common. That absorption is not of the head but of the femoral neck, and I for one don't know why those cases absorb. The theory is that they absorb from irritation but the same thing happens with absolute fixation as far as the spica will fix a hip and those cases, if they absorb will fall apart in bed, no matter how good the position is.

There has been enough good work done this year some of it published to let us know that to maintain abduction, spica fixation orientation is not always enough. I have seen several types fall apart from the same cause of absorption. The question is whether we can obviate that. I am inclined to think that nailing which we have been hearing so much about, is as good a safeguard as we can get against the slipping apart due to absorption.

Whether we can constantly get satisfactory results including cases we see so many of them in the older years when nutrition is rather poor and even with the nailing whether we can constantly get bony union I don't know.

Don't forget that there are a great many cases which get perfectly good clinical results with good close fibrous union and many of the cases we have called bony union in the x ray are not bony union certainly some of them are not, but we do know in cases with absorption of the neck, if there is no displacement, we may get, at the worst, a union which is close-fibrous and eventually often becomes bony even with absorption of the neck.

#### EXCERPTS FROM THE INFORMATION SERVICE OF THE ROCKEFELLER FOUNDATION

"While the Foundation has continued during the year its activity in furthering the advance of knowledge in the fields of public health, medical science, natural science, social science and the humanities, its work in these fields has been vitally changed in scope through selection for intensive work, of those subfields which contribute more directly to the general problem of human behavior with the aim of control through understanding."

"In the fields of medical and natural science the major emphasis has been placed on the problem of mental health and on the development of those sciences whose advance is imperatively demanded to form the substantial scientific basis for the rapidly evolving modern science of man."

During 1933 The Rockefeller Foundation appropriated \$9,890,806.31 for various philanthropic projects.

#### PUBLIC HEALTH

The Foundation expended for public health work during the year the sum of \$3,236,063.01. It supported laboratories for yellow fever research in Lagos, Nigeria, Bahia, Brazil and New York City. It completed, in cooperation with various governments of

Given proper fixation of the hip fixation with the nail as we have been shown here it seems to me probable that those cases which have a favorable condition of nutrition will get bony union anyway and the others are going to be much more certain of getting an eventual bony union than by any other method we have seen so far.

I think there is a certain apology in what Dr O'Meara has spoken of as "blind" nailing. Don't forget gentlemen there isn't any other kind of nailing in the hip.

DR. JOHN W. O'MEARA I have very little to add. There are a few paragraphs of the paper that I didn't think I had time to read. One of them referred to the investigations of a commission appointed by the American Orthopaedic Association three or four or five years ago which showed that in a group of more than two hundred intracapsular fractures from clinics all over the country the percentage of bony union obtained by the Whitman method in patients over sixty years of age was only thirty.

With reference to the factor of internal rotation we were familiar some years ago with Dr Peckham's method of treatment. I think that was based on a much older method first described by Maxwell and later by Ruth. We used it in a number of cases invariably with non-union. The reason we thought, was not that the fracture was not reduced but that it was not fixed. The method combining traction in two directions did not immobilize the hip.

With reference to absorption it has impressed me as curious that absorption of the neck is not seen in cases that are really impacted either by the injury or artificially so far as I know. Absorption of the neck I believe runs along with malposition. It may appear to be good position in the anteroposterior film but I think if we had lateral films of the same hip we would find that the fracture was never reduced.

West Africa an extensive survey which disclosed the areas in Africa where yellow fever occurs assisted the governments of Brazil and Bolivia in an extensive program of yellow fever control conducted experiments and studies on the vaccine and virus of yellow fever and on the mosquito vectors of this disease aided three states in the United States and seventeen foreign governments in antimalaria work carried out malaria studies and surveys in various parts of the world engaged in studies of hookworm disease in Palestine, Egypt, Straits Settlements and Puerto Rico supported studies of *Endamoeba histolytica*, Rocky Mountain spotted fever, tuberculosis, sprue, anemia, filariasis, schistosomiasis, and the diseases affecting the race of the Pacific aided the government of India in conducting experiments on the disposal of refuse sponsored studies of statistical epidemiology contributed toward the development of state and local health services of fifteen European countries the League of Nations, five Far Eastern countries, the government of the South Pacific Islands, six countries of the Caribbean region, two countries of South America, and the governments of Mexico and Canada gave assistance to the central health administrations of fourteen states in the United States and to the local health administrations of twenty three states of the United States four

(Continued on Page 63)

## THE PRESENT STATUS OF INFECTION OF THE UPPER RESPIRATORY TRACT IN ITS RELATION TO FOCAL INFECTION\*

BY WILLIAM V. MULLIN, M.D.†

**T**O find a focus of infection and to decide when its removal will result in the betterment of the patient's physical condition will ever be a difficult problem. During the last twenty years the importance of the removal of foci undoubtedly has been enthusiastically over-emphasized. Someone has well said "Unfortunately most men are incapable of grasping an idea unless they exaggerate it to the exclusion of all others." A typical example of a situation that confronts the ear, nose and throat specialist is something like this "Doctor, I have some arthritis, I have already been to my dentist and had my teeth x-rayed. Now I want to see if you think my tonsils are responsible." This seems to be the understanding of the average finite mind regarding the cause and effect of focal infection.

A little reasoning should prevent many mistakes. If there is infection in one organ of the body it is illogical to assume that it must be caused by or follow, a focus of infection elsewhere. As a rule, a little thought is given to the logic that if the vitality of tissues, or that indefinable thing called resistance, is lowered, infection can lodge in and attack various tissues of the body at the same time. A distinction must be made between a person's susceptibility to infection and an actual focus of infection. And even when a focus is certainly present, we have no yardstick that measures the amount of absorption into the system, and hence judgment can be made only on the basis of how the body reacts to it.

A second cause for error is the lack of cooperation between the internist and the specialist, with the assumption of the latter that if infection is found, it must be the cause of the patient's symptoms, while the finding could readily be coincidental. I have told Morris Fishbein that I am borrowing a very expressive saying from him, namely, "The only exercise some people get is jumping at conclusions."

I feel that the proper evaluation of focal infection in various systemic diseases will never be made by analyzing numbers of cases, nor by statistics, but rather by a careful study of the individual case. There is but one correct method of procedure in each individual instance, to get a detailed history followed by a thorough physical examination and then to weigh careful-

ly the importance and significance of all foci. This is rather bound to keep one within the confines of the straight and narrow path.

In evaluating the importance of various foci, I would place them as follows: tonsils, prostate, cervix, gastro-intestinal tract, and sinuses. It must be borne in mind that often there are multiple foci. The teeth are hardly to be classed with the tonsils and sinuses. Because of their anatomic structure, they are potentially very true foci, the infection is well locked in, almost compelling absorption, while the tonsils and the sinuses may be only portals of entry for infection and can fully recover, while the infection in the joint or elsewhere will go on. It is conceivable that removal of the tonsils might prevent a second invasion of infection, but yet have no effect on the secondary infection already established.

Confined infection is dangerous, for it exerts an influence on metabolic processes, and hence should be eradicated almost irrespective of symptoms, but especially if constitutional symptoms are present. I do object to the so-called microscopic search for some slight remote focus, such as a mild infection in the posterior group of sinuses, with operation, before a general examination is made, when the original infection would probably have returned to normal without surgical treatment.

Before anything should be said relative to foci and arthritis, it must be emphasized that the individual case of arthritis must be diagnosed and classified as to type. Some kinds are in no way related etiologically to infection. Arthritis is not common among the natives of tropical countries. Patients who have it usually improve when they go to warm climates irrespective of foci of infection. There must be a fertile soil for the development of arthritis and when this is present, a focus of infection, the shock produced by an automobile accident, or by a sudden decline in the stock market, can with equal force be the trigger mechanism that spreads the seed. We have all seen patients in whom arthritis developed following an acute pharyngeal infection, when a perfectly clean and adequate tonsillectomy had been performed some time previously. I have even seen a patient die of a blood stream infection following the condition just described.

Infectious arthritis, if it is not checked is progressive and will result in joint destruction and ankylosis and hence no chance should be taken in allowing foci to remain. As an exam-

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ple, a man and his wife both contracted acute sore throats while on a vacation. The husband had had his tonsils removed, the wife had not. He developed infectious arthritis in his left wrist and she in her right knee. Both went to a hospital, were thoroughly examined and received excellent care. The wife has a stiff knee which will require operation. When the acute process in the knee subsided I removed her tonsils, for in view of the circumstances it was felt that the tonsils were potentially dangerous.

Many times in the treatment of arthritic patients, it is much more necessary to build up their immunity by a proper regimen than to break it down further by subjecting them to operations of doubtful value. Operations should not be performed on the patient with hopeless arthritis, nor at a time when the resistance is low. After proper study and the institution of measures to improve the patient's general condition, and when there are definite indications for operation, the removal of foci does produce improvement in many cases of chronic infectious arthritis. Tonsillectomy often yields good results while operations on infected sinuses have been disappointing in my experience.

DeWayne Richey of Pittsburgh told me recently that he had succeeded in finding Aschoff bodies in the tonsils. This would strengthen the belief that if any suspicion is thrown on the tonsils, they should be removed from children with rheumatic fever after the acute attack has subsided.

Chorea in children may have many underlying causative factors. Infection is only one, but if the child who has it gives a history of repeated infections, or shows definite tonsillar infection, this focus should be removed.

The patient with valvular heart disease, such as mitral stenosis has a condition that is very intolerant to infection and if the tonsils are infected, they should be removed in a period between exacerbations. Hypertension in my opinion is not associated with infection, and the removal of foci with any hope of reducing the arterial pressure, is fruitless.

Nephrosis and nephritis are conditions about which there is controversy concerning the influence of infection in their pathogenesis. In my experience, the results from the removal of foci in nephrosis have been discouraging so far as improving the kidney condition is concerned. At the same time I feel that any child with nephrosis who has infected tonsils should be given the benefit of a tonsillectomy, perhaps more for its prophylactic effect, since these patients tolerate infection poorly. However the operation should only be performed when the patient's condition is improved, and not during or immediately after an acute attack. We certainly have no definite proof that glomerular nephritis is of infectious origin but no patient

with this disease should be carrying around an extra burden of infection. Here again, operations should not be performed during the acute stage of the disease.

Infected sinuses in the child with nephrosis or nephritis should be treated adequately and thoroughly before operation is resorted to but the same dictum applies to the sinuses as to the tonsils. They should be cleared of infection and an effort should be made to keep the child free from upper respiratory infection.

Some of the most satisfactory and probably the most brilliant results I have seen following the removal of foci of infection have been for the relief of vertigo in cases of toxic labyrinthitis. At the same time, I feel that I have seen practically no improvement in the removal of foci in cases of eighth nerve deafness.

I have reviewed the histories of a group of cases of congenital deafness in children ranging from nineteen months to fourteen years of age. Of these 25 per cent had had their tonsils and adenoids removed, and that seemed to be all that had been done for them. In other words, practically none of the mothers had been instructed as to the value and necessity for education of the child. In another group of advanced deafness in patients ranging from two to eighteen years of age, over 50 per cent had had their tonsils and adenoids removed merely on the basis that it might help their deafness. But the question of lip reading, or hearing aids, had not been explained to the mothers or to the patients.

Another tragic evidence of overzealous enthusiasm for focal removal is presented by the patient who has had questionably infected or sometimes healthy teeth removed because of the location of the pain or extensive operations on the sinuses, and always a tonsillectomy all having been done because the true diagnosis of fifth nerve neuralgia, a condition not influenced by focal infection, was not made.

Iritis and inflammations along the uveal tract are usually associated with systemic absorption and in such cases a careful check should be made for foci, which should be removed after the examination and the diagnosis have been made by the ophthalmologist. These eye conditions are more often associated with tonsillar infection than infection in the sinuses.

The mention of papilledema and neuritis of the optic nerve always brings forth discussion from those who do and those who do not believe that these conditions are caused by infection in the paranasal sinuses. I am with those who do not and I think that proper examination and study practically always will reveal that the cause is elsewhere.

I can only reiterate the caution and advise not to operate at random on a patient with focal infection and let the failure to obtain results

tell you that his case needed more study. First do everything else that might help and then, after time and careful study, resort to surgical removal only if there are definite indications. I wish also to emphasize the fact that care must be taken in training specialists, so that

they become doctors and diagnosticians first and surgeons afterwards, that they do not hold out a tonsil and adenoid operation as a panacea for all ills and perform this operation indiscriminately without due and weighty consideration.

## THE DIAGNOSIS OF CHRONIC INFECTION OF THE TONSILS IN RELATION TO INDICATIONS FOR OPERATION IN CASES OF CHRONIC FOCAL INFECTION\*

BY GEORGE MORRISON COATES, M.D.†

FOR many years a paper dealing with the tonsils would have been taboo on any such a program as this, but recently interest in this subject has revived, and my attention was called to it by the symposium, or debate, arranged by the Fellowship of Medicine and conducted in London by such distinguished laryngologists as Herbert Tilley, J. A. Glover, Dan McKenzie, and others. In 1931, J. M. LeMeé, of Paris, presented his very thorough study of this question. It was taken up in great detail by Lee W. Dean at the 1934 meeting of the American Medical Association, by Kaiser, Nissen and Mosher at the recent American Academy meeting in Chicago, and last winter by the writer and William Gordon at a symposium before the Philadelphia County Medical Society. It is many years since John Nolan Mackenzie, of Baltimore, startled the profession with his "Massacre of the Tonsils," while the London thesis was "that operations for removal of tonsils are too often performed without adequate cause." To settle these questions one must be informed as to the physiology and function of the tonsils, the relationship of tonsillar sepsis to organic disease elsewhere, and as to what constitutes a proper diagnosis of tonsillar infection. There is not, at present, time for discussion of physiology and function. That the tonsils often act as portals of entry for infection manifested in other parts of the body is rather generally accepted, as well as that chronic disease of the tonsils may be a primary cause of infectious processes of focal origin elsewhere in the body. What is often overlooked is that the infected tonsil may be only one of several such agencies, although perhaps the primary one, and that chronic diseases, such as arthritis, are often due to factors other than infection anywhere, as proved by Pemberton, who showed that fifty per cent of a group of arthritics recovered, or improved, actually in the presence of such a focus.

Even if the disease be of focal origin, and the tonsils evidently grossly infected, removal

may fail to give relief, if other possible foci are overlooked. Such foci may well be in the teeth, sinuses, possibly the ears, the gallbladder, gastro-intestinal tract, prostate, etc. Furthermore, it is true that many individuals carry septic tonsils for many years without showing evidence of disease of focal infection origin. Here we must assume that the resistive powers of the individual are great enough to counteract the toxins fed into the system from the tonsil infection. What may happen, at any time, is that a sudden increase in the virulence of the infection, or a sudden lowering of the resistance of the individual, due to extraneous cause, may upset the previously maintained balance with the result that the symptoms of focal infection become manifest.

From a purely academic standpoint the diagnosis of chronic tonsillar sepsis is fairly easy, but when considered in relation to indications for operation it is a very different, and often difficult, matter. Strictly speaking, still from the academic viewpoint, any tonsil that shows infectious matter in the crypts, or that will show a growth of pathogenic organisms when the crypts are cultured, may be considered infected. To accept this as a clinical standard for diagnosis would condemn all adult tonsils, and probably most of the tonsils of adolescence, if not of childhood also, for there are few tonsils that will not respond to one or both of these tests, especially if we include the foul-smelling cheesy masses in the category of infectious material.

The evidence, clinical and otherwise, for making a diagnosis of chronic tonsillitis, and in this I am in accord with all the authorities mentioned above, although some observers lay more or less stress on different individual points, may be briefly put down as follows. The history of local tonsillar inflammation, acute or chronic, Hajek's dictum—repeated attacks of acute tonsillitis, one or more attacks of quinsy, repeated coryzas beginning with sore-throat, more or less constant soreness and discomfort in the tonsillar region, cervical adenitis, dental sepsis having been eliminated, enlargement or tenderness of the tonsil node at the angle of the jaw, gross hypertrophy of the tonsils, not merely a small extension beyond the anterior

\*Read at the Twenty Fourth Annual Clinical Congress of the American College of Surgeons Section on Ophthalmology and Otolaryngology Boston October 16 1934.

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pillar On the other hand, the small, buried or submerged tonsil is often the more dangerous of the two.

The appearance of the anterior pillar, particularly in its upper portion, is of importance. In chronic infection, especially if a streptococcus is present as the chief infecting organism, the pillar is often inflamed in appearance, red, deep red, or purplish in color. Liquid pus can be seen coming from one or more of the crypts. If not seen, it may be expressed by drawing the anterior pillar forward and outward, and then pushing behind the tonsil. The pus is more often found in the crypt of the upper pole, but it may not be apparent at all at the first examination. Aspiration may also be useful in this respect. A tonsil that is fibrous and firmly attached in its fossa suggests a previous quinsy, the scar of which may be observed, many attacks of acute infection, or a long process of chronic infection, maybe mild in character by which fibrous tissue has been laid down. Simple tonsillar hypertrophy with enlargement of the cryptal orifices often eventually shows small ulcerocongestive lesions at their borders. A bacteriological examination, if a streptococcus is recoverable, is accepted by some as strong confirmation of other signs and symptoms.

Are the caseous masses so often found in adult tonsils signs of chronic infection? This point is at least open to question. Twenty per cent of the respondents of the LeMes questionnaire answered in the affirmative, and it can certainly be demonstrated that these accumulations are frequently accompanied by liquid pus. Several of the participants in the London debate agree with this proposition, although there are many who do not. It seems to me that this condition, if constant, must be considered as chronic tonsillar inflammation, or infection, and that the tonsil so affected is open to suspicion, although this should not constitute, in itself, an indication for tonsillectomy, except possibly for a social reason, such as bad breath.

The presence of small purulent collections sealed in the crypts by inflammatory adhesions of their margins, but often plainly to be seen, must be considered in arriving at a diagnosis, and French, with his transilluminator, found these "abscesses" deep in the tonsil substance, where it is common enough to find them after tonsil removal.

We can, it is conceded, with more or less difficulty, often make a diagnosis of tonsillar sepsis. Is it equally true, then, that we can say with any assurance that there is no infection present? I think not, except by removal and subjection of the tonsil to bacteriological and pathological investigation. How often have we removed a fairly innocuous appearing tonsil, only to see it gush pus from every crypt when squeezed by the snare or guillotine! To certify

that any given tonsil is definitely not a focus is to court diagnostic disaster.

Having made a clinical diagnosis of infection in the tonsil are we now prepared to say that this tonsil must be removed? Not yet, I think, if we wish to be considered conservative. From the viewpoint of systemic infection, it must now be decided whether the tonsillar infection is probably actually causing damage or is likely to cause it in the future. From the standpoint of prophylaxis there is great divergence of opinion. The studies of Kaiser, conducted over a ten year period among the school children of Rochester, N.Y., seem to show statistically that prophylactic tonsillectomy did not make for great immunity to recurrent infections of the respiratory tract, to acute contagious disease or to rheumatism. The studies of Horace Williams in the Philadelphia Hospital for Contagious Diseases, over a similar period, showed rather conclusively that the children in this hospital who had middle-ear suppuration and its complications, were almost all not tonsillectomized. Dan McKenzie says, "I can remember the generation of children before adenoids were known. I remember the discharging ears and the deafness, I remember the dirty noses and the thick, excoriated upper lips, I remember the 'scrofulous' glands in the neck. I remember the vacant stupid faces, I remember the dacryocystitis, weeping pus my companions I have seen dying in middle life from heart disease contracted in childhood after tonsillitis. Then I turn and look at the young men and maidens of to-day, clean of health and stature, and I see the transformation of a race through the influence of a simple operation." Furthermore, McKenzie doubts the value of statistics used to disprove this point, and asks whether the figures are reliable, whether in fact, in those cases where focal disease has developed after tonsillectomy we have any statistics to prove that the tonsils were completely removed, or whether the adenoids were not alone removed in some cases, and whether a recurrence of this lymphoid tissue was excluded by competent examination.

Wllio Herbert Tilley agrees with some of the foregoing statements and that a definite septic tonsil should be removed, he deprecates the wholesale removal of tonsils as a prophylactic measure and urges careful study of the whole physical condition of the patient. His method of diagnosis of a septic tonsil is substantially as outlined above.

When it comes to a diagnosis of tonsillar sepsis in relation to focal infection the case requires more co-operative study. If it is a question of middle-ear or sinus disease the otolaryngologist may well decide upon the proper procedure. When however, the case is one of arthritis, let us say, other problems arise and the case should have the most careful study by all physicians

associated with it. It will not do for the laryngologist who finds the infected tonsils to order immediate removal on the chance that they are the sole, or even the main cause, of the arthritis. Other foci must be sought, or causes other than infection, and the diagnosis of tonsil infection as the etiological factor in the case must be arrived at by general consultations and consideration of all the evidence. Pemberton has brought this out very clearly, and he never allows a tonsillectomy, or any other surgical removal of a focus of infection, not only until the case has been thoroughly studied, but until it has been put in such physical condition that the operation will, at least, do no harm.

Kaiser well says that the reaction against indiscriminate tonsillectomy followed the less striking beneficial results when the tonsils were removed for vague indications, while statistical and clinical study justifies enthusiasm for this procedure in properly selected children. Nissen insists that after infection in the tonsils is determined, the study must be extended to all other parts of the body in order to demonstrate sys-

temic disorder, but even if this is discovered, the relationship between the two must be proved. Close clinical observation by the physician and frequent reports of subjective symptoms by the patient over a considerable period of time are essential to determine the association between the local and systemic infection.

To recapitulate, it is usually possible for the painstaking laryngologist to determine the presence, or probable absence, of significant chronic sepsis of the tonsil. Where the tonsil is very definitely diseased, its removal for prophylactic reasons will often give striking results. When the tonsil is removed on mere suspicion, or after hasty and inadequate examination, the guess may as well be wrong as right. When the septic tonsil is discovered in association with some systemic disorder, the diagnosis of tonsillar infection as the cause of this disorder can only be satisfactorily arrived at after meticulous study and consultation on the part of the laryngologist with the attending pediatrician, internist or surgeon.

## JAMES JACKSON (1815) AND DIGITALIS An Historical Note

BY HENRY A. CHRISTIAN, M.D.\*

AS we are apt to think of our present usage of digitalis, particularly in the form of pills or capsules of powdered leaves, as thoroughly modern, it is well to recall that in powder form digitalis was being recommended to the students of the Harvard Medical School by James Jackson, second professor of the Theory and Practice of Physic, one hundred and nineteen years ago, as shown by the following extract from notes on his lectures taken by a medical student in 1815.

"... for this purpose digitalis is commonly employed. It is given in infusion 3*i* to 5*viii* water in a dose of 3*ss*, or in powder from gr ss to gr iss at a dose and we should go on increasing the dose until some effects are produced. Of these effects some are to be desired and others avoided. The former are a diminution of the pulse and an in-

crease of the urine. The power of this medicine seems to accumulate and to produce suddenly great effects when it has been regularly taken for some time."

These words would be fitting for a lecture of to-day. It is a remarkable fact that the utilization of digitalis as recommended by Withering (1785) and as being taught in Boston by James Jackson in 1815 practically was forgotten until revived by James Mackenzie in the early part of the twentieth century. As Pratt (*J. A. M. A.*, 71: 618, 1918) says, "Withering's splendid work was practically unnoticed by teachers and students of cardiac disease, in England and America at least, for more than a century. Hope, Stokes, Latham and Walshe and our own Austin Flint, masters of medicine though they were, paid no attention to Withering's teachings and never discovered for themselves the great value of digitalis in cardiac failure when properly administered."

\*Christian Henry A.—Physician in Chief Peter Bent Brigham Hospital Boston. For record and address of author see "This Week's Issue" page 75.

## THE DIAGNOSIS IN SPINAL FLUID CONTAMINATED BY BLOOD THE "BLOODY TAP"\*

BY PHILIP SOLOMON, M.D. †

**I**N recent years, the lumbar puncture has passed out of the stage of a highly specialized procedure to be attempted only by a neurologist or neurosurgeon to become part of the diagnostic armamentarium of the internist, pediatrician and general practitioner. There are still localities where lumbar puncture is looked upon as little short of a major operation but unquestionably more and more lumbar punctures are being done each year in the home or office with success and safety. It is because of the increasing realization of the importance of lumbar puncture in diagnosis that the problem of the "bloody tap" has become an urgent one. It has been estimated that about one in every ten lumbar punctures results in a "bloody tap." On the neurological wards of the Boston

portied elsewhere.<sup>2</sup> We are concerned here with the practical application of the results, which have been used effectively at the Boston City Hospital for the past three years.

When the spinal fluid removed at a lumbar puncture is blood tinged, the operator's first concern should be to determine whether the blood was present in the fluid before the puncture or whether it was introduced into the fluid by the operator in performing the puncture. The spinal fluid may have contained blood as a result of severe head injury, cerebral hemorrhage, simple subarachnoid hemorrhage or certain other diseases. A small amount of fluid (two or three cubic centimeters) should be collected in each of three or more tubes. If there is an obvious decrease or variation in the amount

	Bloody Tap	Previous Subarachnoid Bleeding
Homogeneous admixture of blood	0	+
Formation of clot	+	0
Xanthochromia in supernatant fluid	0	+

TABLE I. Criteria for distinguishing the "bloody tap"

City Hospital, the percentage is lower, on the medical wards it is higher. In general practice where many of the patients are struggling children, the incidence of "bloody taps" is probably even higher.

It is common practice to discard the fluid obtained at a "bloody tap" as valueless as is recommended by several textbooks.<sup>3</sup> The usual teaching is to wait three days after the "bloody tap" and repeat the puncture. But where the puncture has been done because of the question of poliomyelitis, encephalitis, or meningitis, the examination of the spinal fluid is a crucial point in diagnosis, and a three day delay becomes a serious matter. It must also be remembered that there are certain conditions in which the spinal fluid contains blood, and it is equally important to establish a diagnosis of one of these conditions as it is to exclude the diagnosis of meningitis, poliomyelitis, etc.

We have developed a method for the analysis of spinal fluid containing blood, which has enabled us in almost every case to obtain the diagnostic information desired in spite of the contamination with blood. The experimental data upon which this work is based have been re-

viewed in the successive tubes, one is almost certainly dealing with a "bloody tap." If the fluid is so grossly bloody that it flows only with difficulty and soon clots, it is best to remove the needle and repeat the puncture a space higher with a fresh needle. (It is wise always to include two needles in the lumbar puncture set.) If the fluid is only moderately bloody it should be collected as usual. The last specimen which is likely to be much less bloody than the others, should be mixed thoroughly and a small portion of it poured off to be used for cell counts. The remainder should then be centrifuged as soon as possible in order to avoid errors due to hemolysis. If the supernatant fluid is colorless compared with water and the sediment shows some clot formation on standing the diagnosis of "bloody tap" is confirmed. In previous subarachnoid hemorrhage the supernatant fluid begins to be xanthochromic as early as three to four hours after the bleeding and clotting does not occur. Table I illustrates these criteria.

The next step in the procedure depends on the purpose for which the lumbar puncture was done. In spite of contamination with blood information of value can be obtained regarding the cell count, the protein, sugar and chloride values, and the colloidal gold and Wassermann reactions. In every case a careful red cell and white cell count should be made

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on the fluid set aside for this purpose. Both counts can be made together by staining with Unna's polychrome methylene blue, which stains the white cells blue and the red cells yellow. The stain is drawn up to the 05 mark in a white blood pipet, and the fluid to the 11 mark. The mixture is shaken for one minute and counted. The result is multiplied by 20/19 to correct for dilution.

In cases of suspected meningitis, poliomyelitis, encephalitis, or whenever the exact cell count in the spinal fluid is important, a white count should be made at once on the patient's peripheral blood. If there is reason to expect the red count to be abnormal, a red count should be made also. The number of white cells which entered the spinal fluid with the contaminating blood can then be calculated by direct proportion, and the number of white cells originally in the spinal fluid therefore obtained. If RBC<sub>B</sub> and WBC<sub>B</sub> represent the cell counts in the blood, RBC<sub>F</sub> and WBC<sub>F</sub> the cell counts in the spinal fluid, and W the white cells originally in the fluid,

$$(1) \quad W = WBC_F - \frac{WBC_B}{RBC_B} \times RBC_F$$

smears should be made of the sediment from the centrifuged specimen and stained with Wright's stain for a differential count and with Gram's stain for organisms. A specimen of spinal fluid should be cultured. The sugar and chloride determinations should be made immediately on the supernatant fluid, since these are little affected by contaminating blood and are of considerable diagnostic value in questions of infection of the central nervous system.

*Example 1* A physician is called to see a child with a history of headache, vomiting, and sore throat. He finds the patient irritable and restless, the temperature 101°, the throat red, and the neck somewhat resistant to flexion. There have been cases of infantile paralysis in town and the parents are extremely anxious. The physician decides that a lumbar puncture must be done. Unfortunately the child squirms as the needle pricks the dura and the needle lurches through to encounter the venous plexus on the other side of the canal wall, so that a "bloody tap" results. The physician collects the fluid nevertheless, and takes a white count on the peripheral blood before returning to his office. Careful counts on the bloody spinal fluid show 25,000 red cells, and 260 white cells. The blood white count was 20,000.

$$W = 260 - \frac{20,000}{5,000,000} \times 25,000 = 260 - 100 = 160$$

In view of the pleocytosis of the spinal fluid, the physician makes the tentative diagnosis of poliomyelitis.

*Example 2* Following a mastoidectomy, a patient complains of severe headache, and nausea. The fever continues high. The neck seems slightly stiff, possibly because of the tenderness about the operative wound. A lumbar puncture is done and a "bloody tap" obtained with a pressure of 300 mm of water. Careful counts show that the spinal fluid contains 20,000 reds and 1,200 whites. The blood count is 18,000.

$$W = 1,200 - \frac{18,000}{5,000,000} \times 20,000 = 1,200 - 72 = 1,128$$

A diagnosis of meningitis is made, but thus far it cannot be determined whether it is a bacterial or aseptic meningitis. A smear of the spinal fluid sediment stained with Wright's stain gives a differential count among the white cells of 93 per cent lymphocytes, 6 per cent polymorphs, and 1 per cent large mononuclears. Smears stained with Gram's stain show no organisms. Cultures are made of the bloody spinal fluid. A sugar determination shows 70 mgm. per 100 cc. A chloride determination shows 725 mgm per 100 cc. Bacterial meningitis is therefore ruled out, and a negative culture report later corroborates this opinion. On the basis of the diagnosis of aseptic meningitis, the operative wound is reopened and explored, and a small pocket of necrotic bone and pus is found close up against the dura.

*Example 3* A young adult is seen with a recent history of increasing severe headache and delirium. On examination the temperature is found to be 102°, the neck is rigid, the eye-grounds show signs of early choked discs, the tendon reflexes are all hyperactive, the Babinski and Kernig's are positive. A lumbar puncture is done and bloody fluid obtained under a pressure of 350 mm. of water. Specimens of the fluid in different test tubes are seen to be equally bloody. The blood does not clot on standing, and on centrifuging the supernatant fluid is definitely xanthochromic. A diagnosis of simple subarachnoid hemorrhage is made and a relatively good prognosis given.

When the presence of tumor is suspected, the cell count should be corrected as before, but here the exact protein value is of chief importance. The protein determination is made on the supernatant fluid, and the value is corrected according to the number of red cells contaminating the specimen. The original protein (P) may be calculated with the greatest accuracy if the patient's red blood count (RBC<sub>B</sub>), serum protein (P<sub>B</sub>) and hematocrit value of the blood (H) are known. If P<sub>F</sub> represents the protein content of the supernatant fluid as determined, and RBC<sub>F</sub> the red count in the fluid

$$(3) P = Pr - \frac{RBC_F}{RBC_B} \times Pb \times (1 - H)$$

For most purposes one can assume an average serum protein of 7 grams per cent, a hematocrit of 43 per cent, and a red count of 5,100,000. Equation (2) then becomes

$$(3) P = Pr - 0.0008 RBC_F$$

In other words, unless the patient is very anemic, the original protein can be estimated with sufficient accuracy by subtracting from the determined protein 4 mg per hundred cc. for each 5,000 red cells of contaminating blood. It is important to remember that this method is not accurate if hemolysis has occurred in the supernatant spinal fluid.

When the diagnosis of syphilis is in question, the cell count and protein value should be ascertained and corrected. Part of the supernatant fluid should be used for a colloidal gold reaction, and part for a Wassermann test. While slight changes may occur in the colloidal gold reaction owing to contaminating blood these usually can be distinguished from the changes characteristic of syphilis of the central nervous system, inasmuch as even 25,000 red cells per cu. mm. of contaminating blood will produce only a few 2's in a normal gold curve. If the Wassermann test of the blood is positive, a positive reaction in bloody spinal fluid is not of value, but a negative reaction is significant.

When the lumbar puncture is done for reasons other than those discussed similar procedures should be carried out to correct for contamination.

**Summary** The importance is emphasized of utilizing for diagnostic purposes spinal fluid obtained in a "bloody tap", and a method presented by means of which a corrected cell count, protein, sugar, and chloride determination, and colloidal gold reaction can be obtained. When it is not practicable to carry out the more exact procedures necessitating studies of the patient's blood, the following gives a good approximation:

(1) The original white count can be obtained by subtracting one white cell for every 500 red cells in the bloody fluid.

(2) The original protein content can be obtained by subtracting 4 mg per hundred cc. for every 5,000 red cells present, or roughly, 1 mg per thousand red cells.

(3) The sugar and chloride values are not appreciably affected by contaminating blood.

(4) The colloidal gold reaction is not affected unless the red cells number over 5,000. Even 25,000 will produce only a few 2's in the curve.

(5) A negative Wassermann reaction in a bloody spinal fluid is reliable, but a positive Wassermann reaction in a bloody spinal fluid is significant only when the blood Wassermann reaction is negative.

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## THE INJECTION TREATMENT OF INTERNAL HEMORRHOIDS\*

BY FRANKLIN G. BALCH, JR., M.D. †

HEMORRHOIDS have existed to plague mankind since time immemorial but owing to an exaggerated fear of the knife or cautery, mankind has continued to suffer from them. Some form of injection treatment has been used by itinerant so-called "doctors" for fifty years or more. These men would treat the patient and then move on to the next town before the slough or abscess developed. Because of improperly selected cases, improper solution and improper methods of injection the treatment fell into disrepute and was used only by the "quacks".

**SELECTION OF CASES** It is imperative that the proper type only be injected. Internal hem-

orrhoids only should be thus treated. External hemorrhoids should never be injected. Any case which continues to bleed after one injection should always be proctoscoped. Miles' divides all hemorrhoids into three stages:

(1) Primary The hemorrhoid is "small and covered with healthy, unaltered mucosa." It "bleeds readily, often profusely." It does not protrude. Hemorrhage is the only symptom.

(2) Intermediate The "bleeding is less frequent and less copious, several actions of the bowels often taking place without any bleeding at all. Protrusion occurs with every act of defecation, is spontaneously reducible, and does not tend to recur except during defecation."

(3) Final. "The bleeding is nil. The protrusion is continuous unless manually reduced. There is a marked tendency to recurrence during slight exertion." Gabriel<sup>1</sup> believes that only

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the first two types should be injected Yeomans<sup>1</sup> states that the "uncomplicated cases of internal hemorrhoids (65 per cent of cases) only should be injected." Perrin<sup>12</sup> classifies hemorrhoids much as does Miles, believing that only the first two classes should be treated by injection. McEvedy<sup>8</sup> states that, in the absence of any complicating pathology, about eighty per cent of hemorrhoids are amenable to treatment by injection. Fansler<sup>2</sup> feels that the only type to be injected "is the internal hemorrhoid which when injected will remain above the internal sphincter" and that no other type should ever be injected. Smith<sup>14</sup> advocates the injection treatment in uncomplicated cases, where protrusion is not excessive or where the patient is a poor surgical risk.

**CONTRAINDICATIONS** Most surgeons with experience in this form of treatment believe that cases complicated by fissure, fistula, external hemorrhoids or internal hemorrhoids associated with ulceration, strangulation, or gangrene should not be treated until these conditions have been removed. Any condition which causes congestion in the hemorrhoidal plexus, such as a pelvic tumor, will make treatment imprudent.

**SOLUTION** Phenol in oil has been used for a great many years, especially by the English. Strengths from five per cent to twenty-five per cent have been employed, but the majority of surgeons now advocate the weaker solutions. Gabriel<sup>3</sup> advocates the use of five per cent phenol in almond oil while Perrin<sup>12</sup> prefers a twenty per cent mixture consisting of one part phenol, two parts glycerine, and two parts of distilled water. Montague<sup>10</sup> uses ten per cent cresylic acid in equal parts of water and glycerine as he believes this is less toxic than phenol. Fansler<sup>2</sup> finds five per cent phenol in olive or Wesson's oil to be the most satisfactory. Terrell<sup>15</sup> since 1913 has used five per cent quinine and urea hydrochloride with excellent results. He states that about one per cent of patients have an idiosyncrasy to this drug. In the rectal clinic at the Massachusetts General Hospital with rare exceptions this solution only has been used for the past five years. Here it is prepared and used in bulk. In private practice it is best used in sterile ampules containing 2 cc each. Five per cent phenol in oil was used in about fifty cases but, owing largely to frequent sloughs, its use was discontinued.

**INSTRUMENTS** Some type of fenestrated speculum is essential. This should either contain illumination by the incorporation of an electric bulb in the speculum or sufficient illumination should be obtainable from an extraneous source. Some men prefer the use of a head mirror others of a light thrown directly into the speculum. At the Massachusetts General Hospital an ordinary student's reading lamp on

a stand is used and has proved to be very satisfactory. Some form of syringe is necessary. Montague<sup>10</sup> prefers a Cook syringe with the solution in capsules. Most men use an ordinary 2 or 5 cc Luer syringe with a fine gauge needle one and a half to two inches in length. At the Massachusetts General Hospital a small fenestrated Otis anoscope, a 5 cc Vim syringe, and a one and a half inch 22 gauge needle are preferred.

**TECHNIQUE** Before any instrument is passed, a digital examination should be made to determine the presence of any other pathology such as carcinoma, fissure, fistula, etc. The patient should be placed on his side with the knees well drawn up so that the anus will be pointing toward the operator. The patient can be of great assistance by holding up the upper cheek of the buttock, thus giving a good exposure of the anus. For a lubricant boric acid ointment is preferable to some water soluble substance. Following digital examination, the anoscope is gently introduced. The anus is best divided into quadrants each of which is inspected separately. It is wise to inspect all quadrants before any treatment is given as otherwise bleeding may interfere with vision. Before injection, the anus should be thoroughly cleaned with a swab soaked in soap solution. Iodine, mercuriochrome, or other antiseptic is not necessary in most cases.

**INSERTION OF THE NEEDLE** It is very important that the needle be inserted above the pectinate line into the true hemorrhoidal tissue as, if the injection be made outside of this, there will be a large amount of pain. If done correctly, the injection should be practically painless. The needle should be inserted into the center of the hemorrhoid and enough of the solution injected to distend the mass without making the surface white and shiny. About 1 to 1.5 cc of quinine and urea hydrochloride is usually sufficient. It is well to leave the needle in situ for about one minute after injection as this tends to lessen the bleeding. This bleeding practically always occurs to a small extent but does not continue. In the rectal clinic it has been a practice to massage the site of injection with the finger following injection to distribute the solution more evenly, thus preventing cold-like fibrosis.

**SYMPOTMS FOLLOWING INJECTION** Usually the patient complains of no symptoms. Occasionally there may be a little stinging pain coming on immediately but more frequently about twenty to thirty minutes after injection. This may last about one hour. It is relieved by a hot Sitz bath.

Following injection, the patient may go about his business but should be cautioned not to do any heavy lifting for about twenty-four hours.

as this may tend to prolapse the hemorrhoids. If this should occur, they must be immediately replaced as otherwise a painful thrombosis will occur.

**NUMBERS OF INJECTIONS** Most proctologists feel that injections should not be made oftener than once a week. Thus has been the practice at the Massachusetts General Hospital. Perrin<sup>12</sup> states that his patients averaged six injections. McEvady<sup>4</sup> reports that ten to twelve are necessary in some cases of prolapse. The average number of injections is about three or four.

**RECURRENT** Morley<sup>11</sup> states that using a twenty per cent phenol glycerine solution, 83 4 per cent of cases had no recurrence in three years, while McEvady<sup>4</sup>, though not quoting definite figures, feels that about ten per cent recur in three years. Yeomans<sup>17</sup> estimates recurrence to be five per cent to fifteen per cent in three to five years. This is in accord with the findings at the Massachusetts General Hospital.

**COMPLICATIONS** As a rule, these are very few and not severe. McEvady<sup>4</sup> has reported four cases out of 300 of unconsciousness and a few with influenza like symptoms with the use of phenol and almond oil. Such symptoms have been practically eliminated since using smaller amounts and a fresh solution. He also reports two cases of ischiorectal abscess which

thirty two cases of slough, five of these from the use of five per cent phenol in oil, and twenty seven from quinine and urea hydrochloride. None of these have been severe and all have subsided within a week or two. Although more sloughs occurred from the use of quinine and urea hydrochloride than from the use of phenol in oil it should be remembered that the latter solution was used in but a small proportion of cases. Severe pain was noted in three cases and prolapse with thrombosis in seven cases. The latter complication we feel is usually due to the fact that when prolapse occurs, the patient does not reduce it promptly. It is rather difficult at times to impress on the average out-patient how important this is.

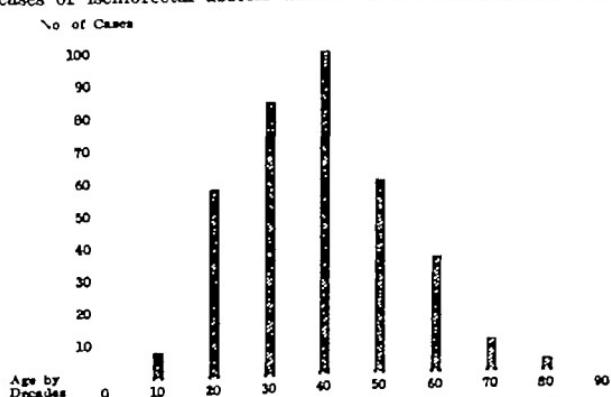
A more detailed analysis of the cases treated at the Massachusetts General Hospital follows:

Number of cases treated	359
Male	227
Female	132

We feel that this difference in the sexes is due to two factors, first, that males do heavier work which predisposes to the occurrence of hemorrhoids, secondly females are more reluctant to report to a general clinic for rectal troubles than are the males.

#### AGE INCIDENCE

From this table it can be readily seen that



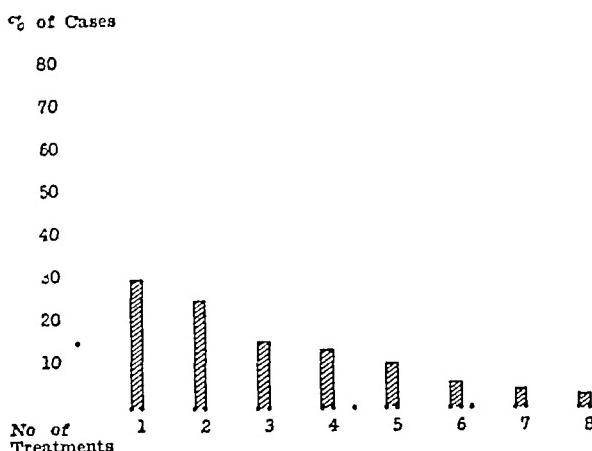
he attributes to insufficient sterilization. Fausler<sup>2</sup> states that he knows of three cases of rectovaginal fistula. These were not his own cases. Yeomans<sup>17</sup> reports several hundred cases with no severe complications, while Perrin<sup>12</sup> using twenty per cent phenol in oil and glycerine, reports no severe complications out of 800 cases. Kilbourne<sup>1</sup> in a study of the results of fifty seven proctologists states that the mortality has been nil slough 1.09 per cent, stricture 0.02 per cent, and hemorrhage .279 per cent. At the Massachusetts General Hospital from January, 1930 through November 1932 there have been

the great majority of cases lie between twenty and sixty, a rather broad age distribution.

**QUADRANTS INVOLVED** No accurate data are available on this but in general the right side is involved more frequently than the left. The left anterior quadrant is much less frequently involved than are the other three.

**Symptoms** Bleeding only was complained of in twenty per cent of the cases, pain alone in two per cent, protrusion only in three per cent, and constipation in forty per cent. The majority complain of a combination of these factors.

NUMBER OF TREATMENTS REQUIRED FOR CURE  
OF SYMPTOMS



Ninety-one per cent of cases required five treatments or less to secure a clinically good result.

**ANALYSIS OF CASES OPERATED UPON** The rectal clinic was organized in 1928. In 1929 forty-two cases of hemorrhoids were operated upon in the hospital, in 1930 twenty-six only, a little more than half the number in the previous year, while in 1931 only six cases came to surgery and in 1932 only five cases. These figures we feel show pretty well how successful is the injection treatment of the average case of hemorrhoids.

**SUMMARY** A brief résumé of the history of injection of hemorrhoids has been presented as well as a brief sketch of the type suitable for this method of treatment, the technique of performing the operation, the ensuing complications, and

the probability of recurrence. A summary of the results in the rectal clinic at the Massachusetts General Hospital has also been presented.

**CONCLUSIONS** The injection treatment of internal hemorrhoids can be satisfactorily carried out in about eighty-five to ninety per cent of cases seen. It is almost painless and practically devoid of serious complications. Injection will cure the symptoms of internal hemorrhoids, namely bleeding and protrusion, and if these do recur, they may be relieved by subsequent injection. Patients are satisfied with the results.

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## MALNUTRITION: THE MEDICAL OCTOPUS

BY JOHN P. SUTHERLAND, M.D.\*

**W**HAT are we to understand by the term "Nutrition"? According to physiologists, nutrition is that biological property characteristic of living structures, of taking extraneous substances into themselves, disrupting these substances and recombining the elements into cells and tissues to form their own organisms and carry on the functions characteristic of the organism itself.

However defined, Nutrition is the most essential and fundamental function of all living things, whether belonging to the vegetable or animal kingdom, and food is absolutely essential to nutrition and the maintenance of life, i.e., of body temperature, energy, growth and all psychic and physical activities, and it goes

without saying that a correct and balanced ration is necessary to an ideal and normal state of any organism.

By way of emphasis certain aphorisms common among laymen may be quoted. For instance, "a girl cannot make a silk dress out of a piece of flannel", "a man cannot build a fire-proof house out of inflammable material", or less elegantly "a person cannot make a silk purse out of a sow's ear".

These aphorisms by common consent are recognized as universally true and indisputable. It equally well be admitted that a man cannot make (or create) a fish, a bird, or even a microbe, he cannot make a tree or shrub or flower, he cannot make a metal or chemical element, he cannot make a potato, a kernel of corn or rice or wheat, a berry or any kind of fruit or nut. In

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a word he cannot create his food. He can, if he is wise, accept and make use of the food created for him by a beneficent nature.

All these and countless other things have been and are constantly being made by an invisible energy for man's appropriation and utilization, in a word, his use. And there are certain immutable laws governing the growth, action and reaction of them, and all of their characteristics. Man may and does utilize these products of creation but his use of them is inevitably and positively controlled by the accompanying laws.

Life and nutrition are most intimately connected, being interdependent. Biologically, life is defined as a process or a condition manifesting itself by irritability, nutrition, growth and reproduction. Normal nutrition signifies a condition of health. The more normal the nutrition the more perfect the health. Health is then evidently dependent on nutrition, and an unbalanced or imperfect nutrition unquestionably leads to or produces imperfect health. It should not be forgotten that nutrition ends where katabolism begins, that is, nutrition is anabolic or constructive, whereas katabolism is destructive.

Does the average person know from the biologic and chemical standpoint what is needed in the way of food for the upbuilding of a normal, enduring, disease-free human body? The inspection of family menus, of the menus of restaurants, hotels, cafeterias, delicatessen and other food shops, and the so-called food offered for sale at bakeries, grocers, confectioners, etc., will furnish an answer to this question.

Even the medical profession is not so well prepared to speak "ex cathedra" on this subject as it should be. For in medical schools the important subject of food and nutrition never has been and is not to day studied with the scientific ardor and thoroughness characteristic of pathology, anatomy, embryology, physiology and other medical sciences;—possibly because nutrition is not yet a science.

Malnutrition shows itself according to its degree, first in discomfort and mild symptoms, functional in character. Gradually only do these disturbances assume an organic change and become fixed physical entities. The abnormal may, of course, manifest itself to any degree, from the almost insignificant and trivial to the most devastating and even fatal results.

Briefly a few clinical cases may be referred to by way of illustrating common and not very serious conditions of malnutrition and yet baffling and obstinate to the medical practitioner, interfering with the health and efficiency of the patient and being quite outside the influence of pharmacotherapy.

1 A young man, aged twenty two, height 5' 8 $\frac{1}{2}$ ', weight 155 pounds, a college student

now in his junior year. His chief complaint at present is alopecia totalis, which for a year and one-half has been present and gradually increasing in spite of much and varied treatment from its incipiency to its existing total baldness, not a hair on any part of the body. He is stockily built and of light to fair complexion. He is affable and genial and not very seriously distressed over his condition as he has no pains or actual suffering. He sleeps well and eats freely without any sign of indigestion. His bowels are fairly active. His urine he quotes as "normal." His physical strength is fair though he is not inclined to athletics.

Why this inefficiency, this deficiency of the function of the skin?

But this is far from all.—He has been free from venereal disease and from such exhausting diseases as typhoid, malaria, erysipelas, etc. But the greater part of his life he has been afflicted with eczema for which he has had a great deal of apparently non-curative medical treatment. The eczema receded as the alopecia appeared. In addition he has had, which is unusual for his age, over 100 fillings in his teeth. Why so much dental caries at his age? What does it indicate?

His hemoglobin is somewhat below the standard.

The whole picture is one of weakened, long-lasting insufficient or inefficient metabolism. Endocrinology may come to the rescue but how about endocrine glands? Are they not a part of the body? And were they not formed originally from food by the process of nutrition? And is not their continued existence and activity maintained by food and nutrition? The patient's affliction is not a germ disease and heredity alone cannot account for its etiology and pathology. Evidently it is a case of malnutrition.

2 This is a case of mother and daughter. The mother, aged fifty 5' 0" in height and 154 pounds in weight (approximately thirty pounds overweight) never has had good health. She has had general psoriasis with more or less severe pruritus since she was thirteen or fourteen years of age, and has spent "all her money on it." She has warts and keratoses all over the body. Lost most of her teeth before she was forty, and had the remainder extracted seven or eight months ago. She had complete oophorectomy and hysterectomy four and one-half years ago (reason not known) and a bilobed thyroidectomy two years ago. She cannot blow her nose on account of "catarrh," probably has sinus and turbinate trouble, and has pain in the right mastoid region. She is "full of symptoms." She drinks an indefinite amount of coffee and "eats anything." Her bowels are moved by castor oil, salts, Ex lax, etc., but they never move spontaneously. Her heart is 80

when she is standing, and is without disease Her blood pressure is 170-110 Her tonsils are big, red, but smooth She cannot drink water as swallowing is difficult She knows nothing of her urine save for frequency Her intellect is of inferior quality

Very evidently the present condition of this woman is one which has slowly developed and, while nothing can be learned of her heredity, it is only reasonable to assume that much of her history and present state is the result of an unbalanced and insufficient nutrition In a word a clear case of malnutrition Certainly she never has been worthy physically or mentally for motherhood, but yet she has had two living children and one still-born

One of her daughters is aged twenty-two, 5' 7" tall and weighs 125 pounds She is therefore not overweight, but she lacks initiative and energy She did not graduate from the high school, making the second year only and then giving up (Mental deficiency?) She is exceedingly "nervous", cries easily and frequently, without reason, gets angry easily, does some reading but no studying, sleeps much, stays at home all the time, does not mix with girls of her own age, has no social life, does not go to dances or amusements of any kind, is not fond of sport except swimming Menstruation came on at sixteen years of age, has always been regular, but she is in bed the first day "with bad cramps" The periods last five days and seem normal but for the dysmenorrhea which, according to many observers, is an evidence of malnutrition This patient has no indigestion, though she has lost all her molars Her bowels have always acted normally She had tonsillectomy and adenoidectomy when seven or eight years of age Her throat seems capacious, roomy and normal

Heredity, of course, laid a sufficient foundation for neurasthenia and neuroses generally, but how about her teeth, dysmenorrhea and malaise? A more suitable nutrition would doubtless have lessened if not wholly prevented her deficiencies, and also much of her malnutrition

3 A man, twenty-eight years of age, 5' 6" tall, never has weighed over 119 and now weighs only 98½ pounds He is married, but is without children, he is able to work steadily and has been free from ordinary diseases His complaint might be diagnosed gastralgia, for he has severe "tightness and heaviness" in the epigastrium often immediately after eating This lasts a variable period, and gradually disappears He says he "eats too much and too often" But his diet is monotonous, its variety being unusually limited He is a very rapid eater and will often eat five bananas at luncheon, and nothing else He has no clinical indications of gastroduodenal ulcer or organic

disease His bowels have been maltreated with cathartics His blood and urine are reported normal He sleeps well In voice, speech and general demeanor he seems very effeminate, but his work calls for a considerable degree of strength His blood pressure is 122/78 He is nearsighted and wears glasses His hearing is all right and his teeth are in fair condition

This patient is very far from being a specimen of well-nourished manhood and yet he has no developed physical abnormality His wife and mother worry very much more about his condition than he does, a psychic influence probably not good for him

His condition may rationally be considered as belonging in the category of malnutrition and while no definite disease can now be recognized he is headed in the direction of a fall and unless suitable nutritional habits can be established his future suffering is sure Pharmacotherapy in his case has been tried and found wanting

4 The last clinical case to be referred to is that of a young man of about thirty years of age His height is over 6' 0" and his weight at its maximum was 236 pounds, but under reasonable diet he is now 220 He is married and has one child Withal of a large bulk, the patient is kind-hearted, good-natured, affable and genial His opinions are apt to be positive His scholastic attainments are rather meagre, for he did not graduate from high school and desultory study since high school age has resulted in mental expansion of mild degree only His business experience has been disheartening on account of the world-wide industrial depression He had, during adolescence, several of the diseases of early life, always making an excellent recovery He maintains that he is well and "all right", but he is not He cannot exercise without discomfort, a brief walk or dance exhausts him and, puffing more or less from dyspnea, he is obliged to rest On rising from a sitting position his pulse immediately climbs into the 90's and even over 100 The tachycardia lasts until he sits and rests Cardiac hypertrophy, valvular disease, coronary troubles, etc., are not yet evident physically His heredity may suggest the possibility of cardiac disease now or in the near future, for his father died very suddenly after only two or three weeks of preliminary suggestions of cardiac trouble The pleasures of the table have appealed too strongly to this patient and he has eaten unwisely and has taken beer and alcohols too freely with a consequent malnutrition which has eventuated in corpulence and tachycardia which may prove his undoing The outlook is not good for him unless something more than pharmacotherapy can be used in his treatment The rational thing is a radical, sensible, physiological dietary reform to overcome the malnutrition from which he is now suffering His blood pressure is 140/90 and his hemoglobin 85 per cent

In these recitals, diagnostic details and laboratory reports, some of which might have been included, have on account of limited space been omitted. Nothing of real value, however has been overlooked.

Contact with cases similar to the preceding is a common thing with most general practitioners, though such patients as a rule are welcomed in only a few consulting rooms. They may not produce tangible "disease pictures"; their pathology may be nil, but they are abnormal, distinctly below the standard in some possibly in many respects. They suffer or are incapacitated to a greater or lesser degree. To treat them as psychoneurotics and prescribe a placebo or some psychoanalytic or hypnotic suggestion, stimulant, tonic, or climatic or environmental change is not enough. Any of these methods may find a niche in the treatment but here also fundamentally, proper nutrition is a necessity if any improvement is to be accomplished.

To consider briefly the different stages in the span of human life our attention may be turned to that most vital period the initial stage of infancy. The most important stage the prenatal is not even yet appreciated at its full significance by the majority of human beings, though within recent years prenatal clinics, instruction, and advice have been available and applied for in all our medical centers and must be looked upon as one of the prominent signs of a philanthropic enlightened and advancing civilization. The prenatal life is unquestionably wholly one of nutrition and its great importance is incalculable. "As the twig is bent so the tree inclines" and expectant mothers throughout the world should be taught the vital influence on their progeny and on the human race they hold as it were in the hollow of their hands." At all events they are to an enormous extent the custodians of human health and welfare.

It is the duty of parents and of all who are connected with the education of the young to teach the rising generation of young women something of the possibilities of pregnancy and the great and wonderful responsibilities of the prospective mother in the prenatal and also the postnatal nourishment of their progeny. A woman is not fit to be a mother simply because she is a woman. The prenatal life is more valuable to the individual child than is any other stage of its existence. The postnatal comes next in importance. During both of these periods the child's future welfare is to a large extent in the control of the mother. Everything therefore depends upon her own nutrition and intelligence. Suppose a breast fed infant has some or many of the diseases common to this early period of life, is the fault due to mother or child? In the great majority of cases the difficulty is maternal the mother being unable

to supply her child with good wholesome milk. She is below standard and therefore the child suffers. During this postnatal stage, the infant is or may be the subject of many diseases. Among the most prevalent are those of the gastro-intestinal tract as these organs are so intimately connected with the nutrition of the infant. The various forms of indigestion, regurgitation, vomiting, gastric flatulence, constipation, cholera infantum, forms of colitis, intussusception, marasmus, colic and convulsions, disturbances from dentition, insomnia, fretfulness, crying, coryza, head colds, sore throats, etc. are frequent manifestations of gastro-intestinal incompetency or more frequently of a maladjusted diet. Aside from the infectious diseases these are the most common at this stage and until within very recent years the most fatal. The mortality among infants all over the world India, China, Africa, South America and among the so-called primitive races, has been exceedingly high and even among the civilized nations infant mortality has exceeded that of any other similar period of life. Attention might be directed to certain statistics kindly furnished by Dr M. Louise Diez, Director of Child Hygiene of the Massachusetts Department of Public Health

Year	MASSACHUSETTS		
	Number of Live Births in Mass.	Number of Deaths under 1 Year	Rate per 1000 Live Births
1914	93399	9894	106
1915	93155	9190	103
1916	93487	9334	100
1917	95731	98.5	97
1918	95607	10820	113
1919	87827	7769	88
1920	91859	8382	91
1921	92.45	7005	76
1922	87636	7129	81
1923	89210	6968	78
1924	91483	6191	68
1925	86014	6294	73
1926	83602	6130	73
1927	82273	6320	65
1928	79054	5118	65
1929	74122	4692	62
1930	73690	4440	60
1931	69385	3803	55
1932	68518	3635	53
1933	63157	3.94	53

The preceding table shows not only the decreasing number of births in Massachusetts during the period of twenty years but it also shows the marked decrease in the total number of deaths as well as the ratio of deaths under one year of age from 113 per thousand live births in 1918 to 52 in 1933 a decrease of more than fifty per cent. The required pasteurization of milk aided at times by immunotherapy has practically done away with typhoid fever, septic and other sore throats, erysipelas, diphtheria and many other infectious disorders in addition to the more ordinary forms of infection leading

to the common gastro-intestinal disorders, an unquestionable victory of science over ignorance and carelessness

It is natural to ask why this decrease. The improvement is due chiefly to the modern control of the substitute feeding of infants. Most unfortunately a large percentage of mothers, civilized and uncivilized, are unable to nurse their children at all, or only in part. Often nursing may be continued for months, but the milk furnished the infant may be insufficient in quality to nourish the offspring. Milk is one of the big wonders of creation, only mammals secrete milk, and according to the classification of mammalia there are approximately two thousand species and practically as many varieties of milk, each species producing the quality and quantity of milk best fitted for the nutrition of its offspring. Man is the only mammal that habitually takes milk after the period of weaning, and he takes liberally the milk of distinctly sub-human and greatly inferior animals, a milk intended specifically for the nourishment of animals of a much lower order than man. Sometime man will know more than he now does about the chemical and biological composition and significance of milk, and will have greater regard for nature's provision and wisdom.

The commonly accepted views concerning milk are reflected in one of the latest utterances on the subject by Brown and Tisdall of Toronto, Canada, in a paper on "The Effect of Vitamins and the Inorganic Elements on Growth and Resistance to Disease in Children." This paper was presented in part before the British Medical Association in London in 1932 and read at the Montreal meeting of the American College of Physicians in 1933. These authors say that "from the standpoint of the child's diet, it may be stated that it is absolutely impossible to furnish an adequate amount of calcium unless liberal amounts of milk are included in the diet." These are strong words and they should attract the attention particularly of mothers, because their milk must supply sufficient calcium and phosphorus as well as iron, iodine, copper and the other elements spoken of by these authors as essentials in the diet of children. In this connection it may be asked, Where and how do cows get the liberal amount of lime found in their milk? Evidently from grasses only, when living their natural lives, or from grasses and grains when domesticated. At all events the cow cannot make calcium any more successfully than the human mother can. The cow gets its calcium and various salts from its monotonous, simple, unvaried vegetable food and from no other source. Why should not the human being, child or adult, be able to acquire its food essentials, calcium and other minerals from natural sources, especially since the human being

has such an astonishing variety of natural foods to use? Nature says the mother precedes the child. And no foster mother, even the most scientific nursing bottle, can substitute fully for a normal mother.

Another question in this connection calls emphatically for consideration, and that is "What is the significance and lesson of the weaning period?" This period was established by nature, not by man, and is universal among mammals. Without reasonable doubt it means that no mammal needs milk after weaning. At all events it is not available except as a result of man's ingenuity and as a commercial venture on the part of the dairyman.

Closely connected with weaning is the process of dentition, which should be well under way when the weaning period arrives. Considering the undisputed importance of dentition, in the lives of the young, and the various troubles all through life arising from imperfections of the teeth, it is the wisest service that can be rendered at this time earnestly to call for consideration of an admirable article by Dr Joseph Garland entitled "Dental Health, a Problem in Nutrition," and published in the March 15, 1934 issue of the *New England Journal of Medicine*. One should not attempt to give any idea of the valuable, comprehensive, assuring, positive teachings of the paper by quoting even liberally from it. One may, however, be pardoned for quoting as follows:

"Our appetites and our genius for satisfying them have betrayed us," "the teeth are indices, sometimes the only obvious ones, of the general state of nutrition," and his concluding sentence "We are realizing at last that those foods which are nearest at hand, which are most edible in their natural state and which require the least preparation and processing are the best suited to our needs."

One should remember that having various dental cavities filled and cared for *does not cure the trouble*, though it may temporarily bridge over the condition for an uncertain interval. The constitutional malnutrition which usually is at the root of the decay persists and must be recognized and treated in order to bring about a cure.

It is impossible to consider in detail each and all of the diseased processes encountered during the stage of infancy. Enough possibly has been said to show the vast importance of a rational and truly natural dietary during this period. The periods of childhood and youth merge together quite intimately, and the diseases common to the combined periods are much the same in character. The foundation has been laid during the prenatal life and the first postnatal year. Now the superstructure is to be raised.

This is the period of the acute, eruptive and contagious diseases. Dental difficulties are always present, eczema, acne and skin diseases prevail, sundry blood abnormalities are apt to show themselves, but during this vital period nutrition is on a very high level, and growth in stature and mental characteristics is astonishingly prominent. Growth and general development, however, are under exceedingly inflexible laws and these laws must be observed if best results are desired. Hit or miss methods of feeding are not permissible. Resistance to the epidemic, infectious, eruptive diseases is notably greater, according to our best observers, among those whose nutrition is kept at the highest level by judicious feeding. The following authoritative utterance is appropriate in this connection:

"The physical well being of the nation is dependent on two factors, heredity and environment, and the most important environmental influence to which we are subjected is food. Food enters more closely and intimately into the metabolic processes and affects them more profoundly than any other external influence. It is now generally recognized that a suitable food supply and its rational utilization are of cardinal importance in maintaining the health and efficiency of the community."

"The first official report issued on the physical examination of recruits during the late War, revealed the fact that a substantial proportion of the population of this country, [Great Britain], suffers from physical defects which are largely traceable to abnormal or arrested development during the period of life when growth is most rapid. Every addition to knowledge indicates more and more clearly that physical defects of this kind have their origin largely in improper nutrition, resulting from deficient or unsuitable diets during early life.

Breast-fed infants of well nourished mothers can withstand conditions of life that would be fatal to others not so well fed. The children of crofters though often living in over crowded hovels are remarkably free from rickets, whereas children living in better surroundings but improperly fed fall readily victims to this disorder of nutrition. The incidence of tuberculosis in a community appears to be closely correlated with the food supply, it diminishes when the food supply is ample and suitable and increases when, for one reason or other, food is difficult to obtain and the quantity and quality of the diet become inadequate." And much more to the same effect in the article "Qualitative and Quantitative Aspects of Nutrition in Relation to Public Health," by J. M. Hamil O.B.E. M.D., D.Sc., from which this quotation is taken. (From "The Imperial Bureau of Animal Nutrition," printed in "Nutrition Abstracts and Reviews," Aberdeen.) At

tention was called to this article by Dr Percy R. Howe, Director of the Forsyth Dental Infirmary, whose original food investigations have attracted nation wide notice and whose biological researches with unbalanced rations have revealed startling and convincing facts.

To emphasize the views expressed in the preceding quotation, some statistics obtained from Boston sources may appropriately be presented, especially as they are gathered chiefly from children of school age.

Forsyth Dental Infirmary is one of the well conducted and useful charities of the city. Here, during 1933, 55,801 children of school age visited the dental clinics for extraction, filling of cavities and correction of deformities of the dental arch. That is, a number equal to nearly one-half the total number of public school children were treated at the Forsyth Dental Infirmary in 1933.

At the Harvard Dental School during 1933 over 9000 patients were treated for various dental troubles, extractions, fillings, etc. Twenty-two per cent or 1980 of this number were children.

At the Boston Dispensary in 1933 there were treated in the morning clinics, including all kinds of dental troubles mostly among children, 12,293 cases, and during the evening clinics 1939 patients, practically all adults, were treated.

These statistics do not by any means give the total number of dental deficiencies which annually occur in a large urban population. Thousands not here included are treated in other institutions or by their private dental surgeons or go without suitable treatment. Remember the quotation from Dr Garland that "the teeth are indices, sometimes the only obvious ones, of the general state of nutrition." If they are unsound the disorder is not so superficial as the teeth themselves are, but much nearer the source of life and growth.

To view the subject at a somewhat different angle it may be noted that the school department reports a registration of approximately 138,000 children in the public schools of Greater Boston. Of this number there are 2169 in special classes on account of backwardness. Some deficiency is present that prevents their keeping up to the grades in addition there are many who fail in promotion and others who fail to graduate. Also from the Walter E. Fernald State School for Feeble Minded at Waverley we learn that in that institution they have a resident population of over 1800 mentally defective children, 1850 being an average population. In addition approximately 600 children annually are carefully examined for mental defects besides approximately 1500 in allotted public schools. A few months prior to his death, an article by Dr Fernald was published in the *New England Journal of Medicine*, in which he

claimed that there were 50,000 mentally deficient children in the State of Massachusetts. The opinion at the school at present is that 100,000 would be a conservative estimate of the number of deficient children in the State. The assertion also is made that the mental defect is not the only one apparent in these children. Physical deficiencies of one sort or another with teeth, mouths, noses, eyes, with muscular and general coordination, gait etc., exist and they are said always to be "big-eaters", to eat twice as much as normal children do. No special dietetic researches have yet been conducted and no opinion is offered as to the cause or causes of these defects, not even heredity is called to account, yet without knowledge of the cause preventive treatment is practically a hopeless task. No field of inquiry promises to yield a richer harvest of good and useful results than this one. Nutrition offers the most hopeful possibilities of solution of this and allied problems.

Convincing evidence of the influence of good or ample nutrition in minimizing the severity of hookworm infestation is given by Professor Wilson G. Smillie of the School of Public Health of Harvard University in his publications. His extensive experience with, and analytical investigations into, hookworm disease in its native habitat qualify him to speak with authority. He claims that "hookworm disease

is the most common parasitic infestation of humanity in the whole world". From the "Intensity Surveys of Hookworm Infestations" and in an article on Hookworm Infestations reprinted from the *American Journal of Diseases of Children* February 1926, in collaboration with D. L. Augustine, Sc.D., he states that "our Brazilian studies showed that good nutrition plays a great part in the bodily resistance to the effect of hookworm" (Pp. 2-3). Also on page 12 he says, "Individuals having ample food and excellent living conditions often have normal hemoglobin despite heavy hookworm infestation. Malnutrition and a poor dietary were important factors which affected the hemoglobin of many of the patients infested with the hookworm". And in the same paragraph he concludes a chapter on "Influences of Nutrition on Hookworm Disease" with the statement "that as ample food builds up resistance against the ravages of hookworm disease, starvation markedly increases the effect produced by the worms upon the body".

The period of adolescence calls for attention. Certain abnormal conditions are very common during this stage of life, and are characteristic of it. For instance the oncoming and institution of menstruation in a large percentage of girls are accompanied by physical and mental ills that cause anxiety to many mothers. Irregularities of menstruation are varied and numerous and much too prevalent. For the func-

tion of menstruation itself is an absolutely normal one, and should cause no more distress than respiration or sleeping. Delayed menstruation, dysmenorrhea, amenorrhea, menorrhagia and metrorrhagia, ovarian disorders, are sufficiently prevalent to merit analysis and study especially from the standpoint of cause and prevention. Why should a normal function produce suffering? Evidently there is something wrong that brings about such misery. Fortunately competent practitioners, research workers and observers have entered this field with inquiring spirits and have done creditable work in ascertaining a probable cause, and in revealing a possible preventive treatment for these difficulties. Mention might here be made of Dr. Edward Reynolds and Dr. Donald Macomber of Boston, who for years have been industriously studying malnutrition as a possible cause for many if not all of these common ills. It is pertinent in this place to refer to Dr. Macomber's work in the study of sterility, found in his articles:

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effect is even more extreme and there comes a point at which activity of the reproductive tract ceases altogether or never develops though the animal may continue to function otherwise in a fairly normal manner."

In a comment on the probable or possible causative relations of endocrine disturbances to sterility, Macomber suggests that the dietary cause, usually of long continuance, capable of producing the sterility may have actually preceded any disturbance of the endocrine glands. He states that so far as he is aware "no one has ever explained what causes these glands to function in an abnormal manner."

Concluding his paper Macomber thinks that "there is a large body of evidence both experimental and clinical which shows that alterations in diet actually do produce sterility. An analysis of the diets eaten by 206 sterile women shows that they deviate in many important ways from normal. A large number of these women show evidences of nutritional disturbances. Of the 206, forty have become pregnant to date even though practically all of them were seen for the first time within the last two years, and this result has occurred at least in part as the result of changes in diet and such other measures as the increasing of exercise, the taking of endocrine medication or the treatment of anemia. It seems to me, therefore that we have in diet a means of treating sterility which we cannot afford to neglect." Macomber is not overpositive or overenthusiastic in his statements, but reasonable and conservative in his claims and conclusions. The weight of his writings, however, leans to the idea that dietary deficiencies are to be looked upon, at least as among the causes of sterility and therefore when suitably modified, food is possibly the chief of therapeutic agencies.

Not to spend too much time on any one period of life, let us turn for a moment to the major stage of adult and senile existence and consider only a few of the disease possibilities of this period.

If there is any chronic disease that stands preeminently as a typical instance of malnutrition it is beriberi. This disease though it had existed practically from time immemorial and had destroyed untold thousands of lives in the Orient, was not recognized as of dietary origin until the Russo-Japanese War when the discovery of its cause was announced. Investigations then and thereafter seemed to confirm the accuracy of the announcement. It was not, however, until 1912, that Casimir Funk as a result of his analyses of rice screenings was able to proclaim to the world that he had succeeded in isolating certain chemical elements which he had found in rice for which he coined the term "Vitaminines", and which he considered of vital value

in maintaining the health of humanity. This discovery, though not fully explaining the cause of the disastrous disease, beriberi, exerted a powerful influence over the thoughts and activities of mankind in both scientific and commercial circles. Without discussing the subject it may be said and is accepted as a definitely proved fact that the long-continued eating of polished rice is the cause of beriberi which may therefore be considered "a deficiency disease", that is, man removes from the rice something that nature provided and the lack of it in the food he eats leads to malnutrition, and in an unknown number of instances to unnecessary suffering and death.

Constipation (sluggish and inactive bowels), with the hemorrhoids, the reflexes and other maladies it gives rise to, is curatively treated by a rationally adjusted diet. Probably over 90 per cent of these cases, no matter how chronic, can be easily and wholly cured by a natural diet and vast sums of money now spent for laxatives and cathartics, saved to be spent more usefully and less injuriously. This is not an idle or thoughtless boast but simply an unvarnished statement of experience covering a long series of years and rather wide contact with this form of malnutrition.

Probably most forms of indigestion or "dyspepsia" are the result of a preceding malnutrition or of faulty methods of living and are curable not so much by pharmacotherapy as by a reasonably physiological diet. Such difficulties naturally produce malnutrition which leads often to more serious evils. Sick headache, vertigo, cardiac palpitation, forms of colitis, ordinary diarrhea, and such conditions common throughout life are evidences of malnutrition and in the main are preventable by suitable, nutritive and well balanced diets.

Corpulence is by very many people looked upon as a sign of prosperity and good health. If at all excessive it is really a warning sign or danger signal that nutrition is not well balanced, in short it is exceedingly significant of abnormal nutrition.

By no less an authority than Joslin, corpulence is looked upon as a precursor of diabetes. According to his latest utterances the chief causes of diabetes are heredity, corpulence and eating extravagantly. Apropos of obesity a few pregnant sentences of Joslin's may be quoted:

"Since insulin the death rate in Massachusetts from diabetes has steadily fallen for all diabetics under the age of 45 years, above 45 years it has risen, chiefly because of fat women. Therefore if anyone in your family has diabetes don't get fat and especially don't get fat if you are a woman with a diabetic heredity."

"If there is diabetes in your family, when you are fair and forty, keep thin."

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**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES**

EDITED BY RICHARD C CABOT, M.D.

CASE 21021

## PRESENTATION OF CASE

A twenty eight year old American wool handler entered complaining of swelling of the legs, abdomen and face.

Five months before entry after a bridge game one evening, the patient noticed that his legs were stiff and that his lower legs and ankles were swollen. When he awoke the next morning he found that his legs had returned to normal, but his face, eyes and neck were swollen. They remained swollen for three or four hours and during this time the swelling in the legs gradually reappeared. The edema of the legs during the afternoon and evening and of the face and neck during the early morning hours persisted for two weeks. There was no pain associated with the swelling. A physician told him that he had nephritis, put him to bed and prescribed a diet consisting of skimmed milk and vegetables. He was not allowed to have meat, fish or eggs. His physician also told him that his urine showed albumin. He remained on this régime for two weeks, was up and about at home for the following week and then returned to work, the swelling having disappeared. Two weeks later he caught cold while fishing on a wharf and another period of swelling similar to the first episode occurred. This diminished after about two weeks, but increased following a cold that he said he acquired playing golf. During the ten days before admission he noticed for the first time that his abdomen was becoming larger and that he also had some shortness of breath after meals. He continued to work until a few days before entry. His urine had not been cloudy or bloody, but he had occasional nocturia in the past six months which had become more prominent in the past three weeks. Before the onset of this illness his weight had been 150 pounds. Since then he had gained approximately 15 pounds.

The family history is non-contributory.

He had been married three years. His wife and two children were living and well.

He had had a tonsillectomy in childhood. There was no history of sore throat except one associated with an upper respiratory infection five years before entry.

Physical examination showed a well-developed and nourished, sallow, pasty looking man in no

acute distress. The skin and mucous membranes were pale. The fundi were normal although the outlines of the discs were not very clear. The lungs showed flatness, absent breath sounds, tactile fremitus, and whispered and spoken voice at both bases, above which there was increased resonance, bronchial breathing tactile fremitus and whispered and spoken voice. The heart was not enlarged to percussion, the left border of dullness being 8.5 centimeters from the midsternal line. The sounds were of fairly good quality with a soft systolic murmur at the apex. The blood pressure was 130/90. The abdomen was distended and a definite fluid wave was elicited. The liver and spleen were not felt. The penis and scrotum were edematous. There was marked pitting edema of the sacrum and lower extremities.

The temperature was 99°, the pulse 90. The respirations were 22.

Examination of the urine showed a specific gravity of 1.020, a trace of albumin and a sediment containing four or five white blood cells and from four to eight granular and hyaline casts per high power field. An Esbach determination of the albumin showed it to be 10 grams per liter. Examination of the blood showed a red cell count of 5,510,000, with a hemoglobin of 90 per cent. The white cell count was 8,000, 77 per cent polymorphonuclears. Two stool examinations were negative. The phenol sulphonephthalein test showed 70 per cent excretion, 45 per cent of which occurred in the first fifteen minutes. A Hinton test was negative. The serum protein of the blood was 4.2 per cent. The non protein nitrogen of the blood was 20 milligrams.

He was put on a high protein, low salt diet, and fluids were limited to 40 ounces. On the fourth day he began to complain of right lower quadrant pain which was fairly constant but not colicky. Examination at that time revealed definite right lower quadrant tenderness. His temperature rose suddenly that day to 102.6°, and the white blood cell count rose to 15,500. That evening there was right flank and right costovertebral spasm and tenderness. The abdomen was tense. A rectal examination was negative. Examination of the urine continued to be approximately the same as on admission except for the presence of three to six red blood cells in three out of five examinations. The serum sodium was 138 milliequivalents, the serum chloride 103. His abdominal pain subsided somewhat on the seventh day, but he still continued to have considerable ascites. That morning the white blood cell count was 2,600 and 2,400 on three successive counts. A differential showed approximately 75 per cent polymorphonuclears. The temperature fluctuated around 103° and the pulse around 130. He developed

a peculiar erythema of the skin. An abdominal tap yielded only two cubic centimeters of yellowish fluid with small flecks. A culture of this fluid and also a blood culture showed pneumococcus. He continued to go downhill, his white count reaching as low as 1,200. He died on the eleventh day.

#### DIFFERENTIAL DIAGNOSIS

**DR MYLES P BAKER** The history is consistent with insidiously developing chronic active Bright's disease. The cases that come into the hospital with their chief complaint an unmanageable painless edema without any of the dramatic symptoms of acute onset are in general the cases in which the prognosis is not good. One finds in the carefully studied nephritis at the Rockefeller Institute that the cases of hemorrhagic Bright's disease with a low serum protein at the onset, massive albuminuria and edema, carry a poorer prognosis than the cases in whom the symptoms are apparently more frightening at the onset. His story is characteristic of Bright's disease in that he has had recurrent edema in association with upper respiratory tract infections three times in the five months before entry. He had been either at first sent to bed in an attempt to get rid of the edema, or, as patients so frequently do, went on working despite the edema and came to the hospital only because it became more unmanageable and symptoms such as dyspnea and swelling of the abdomen began to alarm him.

The physical signs are characteristic—edema below the waist, ascites, hydrothorax. He has no definite arteriosclerotic hypertension. The fundi showed no arteriosclerotic nicking of veins, no exudate or scarring, none of the characteristic picture of long-standing chronic glomerulonephritis.

As regards the urine, we have only one note about the specific gravity, 1.020, if corrected for the amount of excess of albumin that he has in the urine it comes down to 1.016 or 1.017, but we do not know whether his ability to concentrate is impaired. It is important that there is no evidence in the case of recurrent gross hematuria. The serum protein is definitely diminished, probably largely the albumin fraction. This is usually seen in association with this type of renal edema.

In his subsequent course, he went for three or four days with no striking change and then developed signs of right lower quadrant infection with a rise in the white blood cell count, without definite proof of acute appendicitis.

Obviously they temporized with the case because it is not the type of patient on whom one wants to interfere surgically. There is little change in the urinary sediment in these next few days save for the appearance of a few red cells, so frequently a finding if case reports

of "genuine" nephrosis are carefully scrutinized. The importance of the serum sodium and serum chloride is that they bear out the normal non-protein reading and phenolsulphonphthalein test in that we are not dealing with severe renal insufficiency. He went on to develop what so frequently is the terminal picture of these cases, a pneumococcus peritonitis and septicemia, which is fatal. Occasionally one sees a rare instance where some sort of febrile episode will serve to diminish the edema. Cases have been reported of that. There was one boy on the East Medical service three years ago who came in with very much this sort of story. He developed right lower quadrant infection which took care of itself, was later drained as a pelvic abscess, and he has gone on in the past three years to a point where his renal lesion appears to be healed. Only one of Addis' fifty cases has a similar story of progress to healing after a period of chronic renal edema. Usually when a case of Bright's disease develops pitting edema of this type a latent stage is all we can hope for with ultimately renal insufficiency.

One is tempted in a situation like this to bring up the question of nephrosis because after all this man's picture fulfills most of the rather rigid criteria stated for the nephrotic syndrome. He has marked protein loss in the urine, the plasma albumin is indubitably low, he has no hypertension of an established sort. He has only occasional red cells in the urine, certainly no gross hematuria that we know of, and there is no blood non-protein nitrogen retention. Pure nephrosis with these clinical characteristics and with kidneys that are not contracted at autopsy is a rare disease seen usually in children. Even in some of the autopsied cases on children signs of evidence of mild glomerulonephritis will be found microscopically, so that we really have no right to suppose that this man at the age of twenty-eight will show no evidence of glomerular damage at autopsy. The chances are very much against it.

I should be very much interested to know what Dr. Mallory thinks of the recently published work of Blackman at Johns Hopkins. He has observed a good many cases, on the Harriet Lane Pediatrics wards, of nephrosis with chronic pneumococcus infection, and has done a great deal of experimental work with a pneumococcus (I) autolysate, in animals. He believes that with the toxin he can bring about a nephrotic picture in animals, whose kidneys show definite glomerular damage, in degree proportional to dose of toxin administered. The importance of the work, it seems to me, lies in the way in which it takes nephrosis out of the realm of the mysterious and places it in very much the same category as glomerulonephritis, differing only in degree rather than in kind.

I believe this man will show—because we know that he has not had a very long story of

illness and dies with sepsis, not uremia—kidneys that are not markedly contracted perhaps almost normal in size with marked degeneration in the tubules, of course and probably in the glomeruli, also, focal scarring and perhaps more evidence of very active glomerulitis than we gather from the history.

#### CLINICAL DISCUSSION

**DR. WALTER BAUER:** This man came in while I was on the visit. It was our feeling that he had glomerulonephritis with a nephrotic syndrome. We had interpreted the abdominal pain from the time of its first appearance up to the time of exitus as being due to a complicating pneumococcus peritonitis. I do not believe that there is such a disease as a true nephrosis, nor do I think we can say that the so called nephrosis patients have only tubular disease. It would seem that one has no right to speak of a glomerulus which is capable of allowing grams of albumin to come through each day as being normal even though there be no demonstrable change in the glomeruli by the ordinary histological methods. Such a glomerulus cannot be considered a normal glomerulus, physiologically speaking. A few years ago Dr Bell was able to show very definite changes in the glomeruli in cases diagnosed as nephrosis by special staining methods. Yet, some of these kidneys on first appearance seemed to show nothing more than a true tubular lesion. Therefore I believe that in this type of nephritis we always have some glomerular involvement.

#### CLINICAL DIAGNOSES

Chronic glomerulonephritis (nephrotic syndrome)

Pneumococcus peritonitis

#### DR. MYLES P. BAKER'S DIAGNOSES

Chronic glomerulonephritis.

Pneumococcus peritonitis

#### ANATOMIC DIAGNOSES

Acute glomerulonephritis with secondary nephrosis.

Pneumococcus (Type I) peritonitis.

Pneumococcus (Type I) septicemia

Bronchopneumonia

#### PATHOLOGIC DISCUSSION

**DR. TRACY B. MALLORY:** The autopsy in this case showed almost exactly what was predicted. The only variation was that the lesion seemed rather more acute than Dr. Baker apparently expected. The date of onset of the average case of nephritis is nearly impossible to determine from the history and one generally is safe in assuming that the renal damage is more chronic and extensive than the story suggests. In this

case, however, the tables have been turned. Grossly we found rather swollen, pale kidneys, without any hemorrhages or any trace of scarring on their surfaces. It was impossible in the gross to say whether it was nephritic or nephrotic. Microscopically there was a very acute but rather mild glomerulitis and also a certain amount of tubular degeneration, on the whole much less striking than the average case with this symptomatology would show. With ordinary stains the tubules merely seemed unusually dilated and filled with large amounts of albuminous detritus. With fat stains we found a great deal of fat in Henle's loops, a very unusual place and a slight amount in the convoluted tubules. Very little in the way of acute degeneration of tubular cells could be made out.

The terminal event of course was a pneumococcus peritonitis and along with that a pneumococcus septicemia and a terminal pneumonia. During the very last stage of his illness the white count steadily dropped, there is one reading as low as 1200. The bone marrow shows a marked diminution in the number of myeloblastic elements and a very considerable increase in the number of plasma cells, a picture that is often seen in the later stages of true agranulocytosis.

**DR. HAROLD L. HIGGINS:** We discussed at one of these meetings a case\* of nephrosis in a boy of twelve who had a pneumococcus peritonitis and also had a low white count, around 2200, just before he died.

I think this present case is typical of nephrosis as we see it in children, especially as to the course. He had three attacks of edema and nephrosis from the first two of which he seemed to recover. It is rather interesting to note that he improved on what we might call a restricted or low protein diet, whereas he did not recover on the high protein diet which was given him later.

**DR. MALLORY:** The greatest danger in these cases is infection. I think an argument can be raised against bringing a case of this sort into the hospital. We have very little to offer in the way of therapy and the possibility of infection leaps up when they are placed in the wards of a hospital.

In answer to Dr. Baker's question about Blackman's work I think it is impossible to judge it at the present time. There is no chapter in the entire history of experimental medicine more replete with errors than the experimental production of renal disease. Glomerulonephritis, for instance, has been produced by a score of different investigators in as many different ways, yet it is questionable if any of the methods has been successfully checked in a second laboratory. There can be no doubt of

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## GOVERNOR CURLEY'S INAUGURAL ADDRESS

ON January third Governor Curley delivered his inaugural address at the Massachusetts State House before a large and enthusiastic audience. The address as a whole was thoroughly in keeping with his vigor and breadth of vision. It is particularly appealing to the medical profession that he should have expressed so plainly his views regarding the importance of adequate public health legislation, and the need for the maintenance of essential services for the prevention of diseases. He said to the members of the Legislature in this connection "The Commonwealth of Massachusetts has always maintained an enlightened interest in matters pertaining to the health of its citizens. It has been expedient from time to time to establish and maintain essential service, and to enact or amend laws for enlarging the scope of those departments created for the prevention of disease, since they affect the very lives of our people, and should be administered with the highest possible degree of efficiency. I have received

assurance that in the event of the appointment of a commission for the study and revision of public health laws of the Commonwealth, a national foundation interested in public health will defray the expenses of the commission, and subject to favorable action by your honorable body I shall appoint a commission."

Governor Curley's interest and progressive attitude toward improving the health of the citizens of Boston has been already clearly demonstrated in many ways during his tenure of office as Mayor. No city in America has made more public health progress during the past twenty years than Boston. During twelve of these years, Mr. Curley served as Mayor. The development and the maintenance of the health units, the organization of a sound child health program, the reduction of tuberculosis, the extension of the dental service, the furtherance of the control of communicable disease, and the promotion of health education are but some of the activities of the department of health which received his undivided support and backing. It is gratifying, indeed, to the people and particularly to the doctors of Massachusetts to know that in his higher office Governor Curley has in mind a statewide effort to continue to safeguard the well-being and to protect the health of the people of the Commonwealth.

## TO THE FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY

EXTENSIVE plans are being worked out to make the next annual meeting of the Massachusetts Medical Society in Boston, during June 1935, the most successful on record. Each individual fellow of the State Society is urged by the Committee of Arrangements to set aside June 3, 4, and 5 so that everyone may take an active interest in that meeting. Medical and surgical subjects, which are of interest particularly to the general practitioner, will be thoroughly covered by the speakers. Active participation in the discussion of these subjects is urged on the fellows of the Society for the purpose of having an enthusiastic and instructive meeting, thereby promoting valuable information for all concerned.

Members are strongly urged to plan to come to our meeting with their wives, and accept Boston's hospitality, at the same time attending a part, if not all, of the medical meetings. Golf, sight-seeing and other features have been arranged by special sub-committees working to afford the fellows and their wives or families a most enjoyable occasion.

The success of this meeting depends on your cooperation and active interest in your organization.

Let us make this coming annual event the most successful in the history of our Society!

## THE BILL TO SECURE JUSTICE FOR DOCTORS AND HOSPITALS

ANOTHER effort is to be made this winter to induce the legislature of Massachusetts to enact a bill which will safeguard the doctors and hospitals who are called to treat accident cases which do not come under the provisions of the law relating to industrial accidents.

It is often found that doctors and hospitals are called upon to treat persons injured in automobile accidents and sometimes such cases are settled by lawyers or directly to the injured person, the doctor and the hospital not being recognized.

Dr Miles of Brockton, a member of the Senate, tried valiantly last year to have a bill enacted which would cover such claims, but with out success. His experience has led to the presentation of a bill which is modeled in conformity with that of New Jersey, merits careful consideration by the Committee on State and National Legislation of the Massachusetts Medical Society, and seems to deserve support.

As set forth in Dr Miles' appeal to the medical profession, the physicians of the State should attend the hearings and show an enthusiastic support of Senator Miles' effort in their behalf.

### THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

O'MEARA, JOHN W. A.B. M.D. Harvard University Medical School 1918 F.A.C.S. Senior Orthopedic Surgeon Worcester City Hospital Orthopedic Surgeon, St Vincent Hospital. Consultant in Orthopedic Surgery Clinton Hospital and Worcester State Hospital. His subject is "Fractures of the Femoral Neck Treated by Blind Nailing." Page 43 Address 390 Main Street, Worcester Mass.

MULLIN, WILLIAM V. M.D. University of Denver School of Medicine 1908 F.A.C.S. Head of Department of Otolaryngology Cleveland Clinic. His subject is "The Present Status of Infection of the Upper Respiratory Tract in Its Relation to Focal Infection." Page 50 Address Cleveland Clinic Cleveland, Ohio

COATES, GEORGE MORRISON. A.B. M.D. University of Pennsylvania School of Medicine 1897 F.A.C.S. Professor of Otorhinolaryngology, Graduate School of Medicine University of Pennsylvania. Professor of Otolaryngology University of Pennsylvania. Attending Otolaryngologist to Abington and Presbyterian Hospitals. Consultant Otolaryngologist, Chester County Hospital, West Chester Consulting Otolaryngologist.

Veterans Administration. Secretary American Laryngological Association from 1920 to 1933 President in 1933. His subject is "The Diagnosis of Chronic Infection of the Tonsils in Relation to Indications for Operation in Cases of Chronic Focal Infection." Page 52 Address 1721 Pine Street Philadelphia, Pa

CHRISTIAN HENRY A. A.M. LL.D., Sc.D., M.D. Johns Hopkins University School of Medicine 1900 Physician in Chief, Peter Bent Brigham Hospital Boston. Hersey Professor of the Theory and Practice of Physic, Harvard Medical School. His subject is "James Jackson (1815) and Digitalis." Page 54. Address Peter Bent Brigham Hospital, Boston

SOLOMOV, PHILIP B.S., M.D. Harvard University Medical School 1930 Instructor in Neurology and Austin Teaching Fellow, Harvard Medical School. Junior Visiting Neurol ogist, Boston City Hospital. His subject is "The Diagnosis in Spinal Fluid Contaminated by Blood The Bloody Tap." Page 55 Address 70 Fenway, Boston.

BALOH, FRANKLIN G., JR. A.B., M.D. Harvard University Medical School 1923 F.A.C.S. Assistant in Surgery, Harvard University Medical School. Assistant Surgeon to Out-Patients, Massachusetts General Hospital. Assistant Surgeon Faulkner and Collis P Huntington Memorial Hospitals. His subject is "The Injection Treatment of Internal Hemorrhoids." Page 57 Address 279 Clarendon Street, Boston.

SUTHERLAND, JOHN P. Sc.D., M.D. Boston University School of Medicine 1879 Dean Emeritus Boston University School of Medicine. Formerly Professor of Anatomy, Boston University School of Medicine. Professor of Theory and Practice, Boston University School of Medicine 1917 to date. His subject is "Malnutrition The Medical Octopus." Page 60 Address 295 Commonwealth Avenue, Boston.

### MASSACHUSETTS LEGISLATIVE NOTES

#### THE BILL REFERRED TO IN THE LETTER OF DR. CHARLES G. MILES MEMBER OF THE SENATE

An Act providing security to Hospitals and Physicians in the Enforcement of Reasonable Charges for Treatment of Certain Personal Injury Cases.

Be it enacted by the Senate and House of Representatives in General Court assembled and by the authority of the same as follows:

Section 1 Chapter two hundred and fifty five of the General Laws is hereby amended by adding at

the end, under the heading, *Liens of Hospitals and Physicians*, the following six new sections

**Section 40** Every registered physician, and every person maintaining within the commonwealth a hospital other than one maintained by the commonwealth or a political subdivision thereof, shall have a lien upon any and all rights of action, suits, claims, counterclaims or demands which any person treated by such physician, or admitted to such hospital and receiving treatment, care and/or maintenance therein, on account of personal injuries received by him as the result of the wrongful or negligent act or failure to act of any person, may have, assert and/or claim against such last named person, such lien to be for all reasonable charges of such physician for medical and/or surgical treatment, or for all reasonable expenses and charges of such hospital, at ward rates, as the case may be, for such treatment, care and/or maintenance of such injured person up to and including the date of payment of damages for such injury, provided that a written statement containing the name and address of the injured person, if known, the date upon which his injuries were sustained, the name of the physician, or of the hospital or of the person maintaining the same, as the case may be, and his or its location or address, and, if known, the name and address of each person alleged to be liable to pay damages to such injured person for such injuries shall be filed in the office of the clerk of the courts (in Suffolk County in the office of the clerk of the superior court for civil business) and of the county wherein such injuries were sustained, prior to the payment of such damages, and provided, further, that such physician, or such hospital or the person maintaining it, shall immediately upon filing such written statement mail, postage prepaid, a copy of such statement, with a record of the date and place of filing thereof endorsed thereon, to each person so alleged to be liable to pay damages whose name and address are known to the lien claimant. The claim of a registered physician made under authority of this section may be included in, and made a part of, the claim of a hospital hereunder.

**Section 41** The reasonable charges for which a lien under the preceding section may be claimed by a registered physician shall not exceed the charges specified for the services performed in the schedule of charges established for the county within which the lien is claimed by the Massachusetts Medical Society, which is hereby authorized forthwith to establish such a schedule for each county within the commonwealth, and shall file promptly a copy thereof, and of all subsequent charges, amendments and additions therein and thereto, in the office of the clerk of the courts (in Suffolk County in the office of the clerk of the superior court for civil business) of the county wherein such schedule is, or is to be, effective. Before any such schedule, or any change, amendment or addition therein or thereto, shall be come effective, a public hearing thereon shall be held

by a judge of the superior court sitting within and for such county, public notice of the time and place of which hearing shall be given by publishing the same at least thirty days before such date in a newspaper having a general circulation in such county. If, after such hearing, the judge shall be satisfied of the reasonableness and sufficiency of such charges or of such change, amendment or addition therein or thereto, he shall issue an order to such effect and file the same with the clerk, and thereafter in any proceeding in such county to enforce a lien established under section 40, such schedule may be introduced as evidence of the reasonable value of the services so performed, but in no event shall any lien be enforced for any charge in excess of such schedule.

**Section 42** Any lien referred to in section 40 shall attach to any verdict, report, decision, decree, award or final judgment or order made or rendered in any action or proceeding in any court of the commonwealth, or by any board or commission thereof, in any suit, action or other proceeding brought by such injured person, or by his estate in case of his death, against any person for the recovery of damages on account of such injuries, as well as to the proceeds of any settlement of any such suit or of the settlement of any such claim or demand effected by any such injured person with such other person.

**Section 43** After the filing of the notice as provided by section 41 no release of any judgment, claim or demand by such injured person shall be valid or effectual as against such lien, and any person making any payment of damages to such injured person or to his legal representative for injuries sustained, or for death caused by such injuries, shall for one year from the date of such payment remain liable to the lien claimant for the amount of his or its reasonable charges due at the time of such payment to the full extent of the services and expenses to the date of such payment, and any such lien claimant may within such period enforce his or its lien by a suit at law against the person making such payment of damages.

**Section 44** The clerk of the courts of each county (in Suffolk County the clerk of the superior court for civil business) shall at the expense of his county provide a proper docket, to be called the physician and hospital lien docket, in which, upon the filing of any lien claim under section 41, he shall enter the name of the injured person, the date of the accident and the name of the registered physician, or of the hospital or person maintaining the same making the claim. Such clerk shall also prepare and keep up to date a proper index of said docket, and shall be entitled to the following fees:

For filing such claim \_\_\_\_\_, and at the rate of \_\_\_\_\_ cents per-folio for each entry made in the lien docket and \_\_\_\_\_ cents for each search made by him in his office for a lien claim.

**Section 45** Any person against whom a claim for compensation for injuries suffered by a person re-

ferred to in section 40 shall be made may examine the records relative to the treatment care and/or maintenance of such injured person made or kept by the lien claimant.

H 59 reads as follows

*To the General Court of Massachusetts*

In compliance with General Laws chapter 30 section 33 I have the honor to submit herewith such portions of my annual report for the year 1934 (Pub Doc. No 34) as embody recommendations for legislation, accompanied by a draft of bills to cover such recommendations

*Vaccination of Children in Private Schools*

(1) The general laws at present require smallpox vaccination of children as a prerequisite to public school attendance. While this has been effective in keeping the incidence of the disease at a figure lower than that of any other State in the Union this protection to the community has come from the enforcement of this provision upon those who could not afford to go to a private school. This means then, that those financially able to attend a private school can purchase their protection at the expense of those less favorably situated. The proposed amendment in extending the compulsory vaccination to include private schools would provide for equal participation on the part of all, thus avoiding any suggestion of what may well be called at present class legislation. In addition, it would prevent the occasional case of smallpox that occurs from time to time among children who have evaded or escaped vaccination through private school attendance.

*Treatment by Cities and Towns of Indigent Persons Suffering from Gonorrhea or Syphilis, and Divulging of Hospital Dispensary Laboratory or Morbidity Reports and Records Pertaining to Gonorrhea or Syphilis*

The wisdom of the following modifications of existing statutes pertaining to gonorrhea or syphilis is self-evident. They aim—

(2) To remove any doubt as to local responsibility for furnishing treatment to infected indigents for the good of the individuals and the protection of the public.

(3) To remove any possible restraint from a physician who believes it advisable to give information necessary for self protection to the husband or wife of an infected person under his care.

The words "gonorrhea or syphilis" are substituted for the words "venereal diseases" for the sake of conformity with the statutes. Gonorrhea and syphilis have been declared diseases dangerous to the public health but venereal diseases have not been defined either by the Legislature or the State Department of Public Health.

Very truly yours,

HENRY D CHADWICK, M.D.  
Commissioner of Public Health

H 60 is an act requiring the vaccination of children in private schools and reads as follows

Section fifteen of chapter seventy-six of the General Laws is hereby amended by inserting after the word "public," in the first line the words "—or private" — so as to read as follows — *Section 15* An unvaccinated child shall not be admitted to a public or private school except upon presentation of a certificate like the physician's certificate required by section one hundred and eighty three of chapter one hundred and eleven. A child from a household where a person is ill with smallpox, diphtheria, scarlet fever, measles, or any other infectious or contagious disease or from a household exposed to contagion from any such disease in another household shall not attend any public school during such illness or exposure until the teacher of the school has been furnished with a certificate from the local board of health or from the attending physician stating that the danger of conveying such disease by such child has passed.

H 61 is an act relative to treatment by cities and towns of indigent persons suffering from gonorrhea or syphilis and reads as follows

Section one hundred and seventeen of chapter one hundred and eleven of the General Laws is hereby amended by inserting after the word "city" in the first line the words "—or town"—and deleting the word "contagious" in the second line and the words "or infectious" in the third line—and by substituting the words "—gonorrhea or syphilis" — for the words "venereal diseases" in the third line—so as to read as follows — *Section 117* Each city or town shall provide for treatment, either in a hospital or as out patients of indigent persons suffering from gonorrhea or syphilis.

S 17 is an act providing for increased compensation in certain industrial accident cases and reads as follows

*Section 1.* Section thirty four of chapter one hundred and fifty two of the General Laws as appearing in the Tercentenary edition is hereby amended by striking out, in the fourth line, the word "eighteen" and inserting in place thereof the word "twenty-one" and by striking out, in the fourth and sixth lines, respectively the word "nine" and inserting in place thereof in each instance, the word "twelve" — so as to read as follows *Section 34*. While the incapacity for work resulting from the injury is total, the insurer shall pay the injured employee a weekly compensation equal to two-thirds of his average weekly wages but not more than twenty-one dollars nor less than twelve dollars a week, except that the weekly compensation of the injured employee shall be equal to his average weekly wages in case such wages are less than twelve dollars and the period covered by such compensation shall not be greater than five hundred weeks nor the amount more than forty five hundred dollars.

*Section 2* and section thirty five of said chapter one hundred and fifty two as so appearing is here-

by amended by striking out, in the fifth line, the word "eighteen" and inserting in place thereof the word — twenty one, — so as to read as follows  
*Section 35* While the incapacity for work resulting from the injury is partial, the insurer shall pay the injured employee a weekly compensation equal to two-thirds of the difference between his average weekly wages before the injury and the average weekly wages which he is able to earn thereafter, but not more than twenty one dollars a week, and the amount of such compensation shall not be more than forty five hundred dollars

**H 50** Section 1 provides that the Gardner state colony is hereby made a state hospital, under the name of the Gardner state hospital, for the care and treatment of the insane, and shall be subject to all provisions of general law applicable to such hospitals

**SECTION 2** Section five of chapter nineteen of the General Laws, as appearing in the Tercentenary edition, is hereby amended by striking out, in the fourth line, the word "colony" and inserting in place thereof the word hospital, so as to read as follows  
*Section 5* The boards of trustees of the following public institutions shall serve in the department Belchertown state school, Boston psychopathic hospital, Boston state hospital, Danvers state hospital, Foxborough state hospital, Gardner state hospital, Grafton state hospital, Walter E Fernald state school, Medfield state hospital, Metropolitan state hospital, Monson state hospital, Northampton state hospital, Taunton state hospital, Westborough state hospital, Worcester state hospital and Wrentham state school

**SECTION 3** Section twenty five of chapter one hundred and twenty three of the General Laws, as so appearing, is hereby amended by striking out, in the fifth line, the word "colony" and inserting in place thereof the word —hospital,— so as to read as follows —

**SECTION 25** The state institutions under the control of the department shall be Worcester state hospital Taunton state hospital, Northampton state hospital, Danvers state hospital, Grafton state hospital, Westborough state hospital, Foxborough state hospital, Medfield state hospital, Monson state hospital, Gardner state hospital, Wrentham state school, Boston state hospital, Walter E Fernald state school, Boston psychopathic hospital, Belchertown state school, Metropolitan state hospital, and such others as may hereafter be added by authority of law

**SECTION 4** of said chapter one hundred and twenty three is hereby further amended by incorporating Section 50 *Section 50* A justice of the superior court in any county, and any of the judges of probate for Suffolk county, the judge of probate for Nantucket county, or a justice or special justice of a district court, except the municipal court of the city of Boston, within his county, may commit to any institution for the insane, designated under or described in section ten, any insane person, then re-

siding or being in said county, who in his opinion is a proper subject for its treatment or custody

Section seventy seven of said chapter one hundred and twenty three is amended by Section 5

If a person is found by two physicians qualified as provided in section fifty three to be in such mental condition that his commitment to an institution for the insane is necessary for his proper care or observation, he may be committed by any judge mentioned in section fifty, to a state hospital, to the McLean hospital, or, in case such person is eligible for admission, to an institution established and maintained by the United States government, the person having charge of which is licensed under section thirty-four A, for a period of thirty five days pending the determination of his insanity

**SECTION 6** Section seventy-eight of said chapter one hundred and twenty three is amended by Section 6 as follows

The superintendent or manager of any institution for the insane may without the order of a judge required by sections fifty and fifty one receive into his custody and detain in such institution for not more than five days any person whose case is certified to be one of violent and dangerous insanity or of other emergency by two physicians qualified as provided in section fifty three by a certificate conforming in all respects to said section, which certificate may be filed with a judge, as the certificate required by section fifty-one

**SECTION 7** is amended as follows

The superintendent or manager of any institution for the insane may, when requested by a physician, member of the board of health, sheriff, deputy sheriff, member of the state police, selectmen, police officer of a town or by an agent of the institutions department of Boston, receive and care for in such institution as a patient, for a period not exceeding ten days, any person needing immediate care and treatment because of mental derangement other than delirium tremens or drunkenness

Section eighty six of said chapter one hundred and twenty three, as so appearing, is hereby amended in Section 8 by striking out, in the fourth and fifth lines, the words "in the case of Gardner state colony when so authorized by the department," so as to read as follows *Section 66* The trustees, superintendent or manager of any institution to which an insane person, a dipsomaniac, an inebriate, or one addicted to the intemperate use of narcotics or stimulants may be committed, may receive and detain therein as a boarder and patient any person who is desirous of submitting himself to treatment, and who makes written application therefor and is mentally competent to make the application, and any such person who desires so to submit himself for treatment may make such written application No such person shall be detained more than three days after having given written notice of his intention or desire to leave the institution.

## BOSTON EMERGENCY CAMPAIGN OF 1935

Another Boston Emergency Campaign starts January 14 1935. The success of the campaign will depend upon how well it is supported by all classes of society. The attitude of the medical profession will be most important because of the unique position which it holds in the community. No other group of men come into such close personal relationships with all classes. The attitude of the doctor must influence the ideas of his patients. Since the success or failure of the campaign this year is of vital interest to the medical profession, the individual doctor and the whole community — each physician should acquaint himself with present conditions and the object of the campaign.

The object of the campaign is to obtain the necessary financial support for those institutions which are not receiving adequate funds. It is not generally understood that federal relief is doing little or nothing for the support of private institutions. The object of government aid has been the relief of the destitute by supplying them with work and the stimulation of recovery from the depression by putting more money into circulation. Little or none of the many billions of dollars which one reads about over his breakfast coffee is going toward such institutions as hospitals, schools and the various charitable organizations which are a necessary part of our community life. In the past these institutions have been organized and supported by private donations. With the decrease in incomes, donations have necessarily decreased to a point where the usefulness of these organizations are much curtailed and where in many instances it is only a question of time when they will cease to function.

Conversations with numerous physicians indicate that many either do not understand the true situation or have not thought to what results the present condition may lead. The physicians who have expressed a lack of interest or an antipathy to the campaign have given one of three reasons:

1. It is foolish to donate money at a time when one anticipates a very definite increase in taxes.

2. The campaign may help the hospital and other charities but will be of no personal help to the physician.

3. The general practitioner would be better off with some form of state medicine which would guarantee him a fixed salary.

Let us consider whether these reasons are well taken. It is true that in the past a person was better able to know what his coming expenses would be and how much of his income could be given to charity. Now with a smaller or perhaps decreasing income he does not know how much larger his taxes will be. He does not feel obligated to give more than his just share. But there is also another side to the picture. If our institutions do not receive adequate financial support by private donations, they

must cease to exist or will be taken over by the government. In turn government support will increase our taxes.

A moment's thought will convince one that our institutions which have developed under the benevolent influence of charity now form an integral part of our community life and will not be allowed to perish. The layman criticizes the hospital not because he wants it to be done away with, but because he wants it to give him more than it is doing. Institutions of this kind will therefore persist. But many persons do not stop to think that the existence of most hospitals has depended upon the support of a few generous and public-spirited persons.

It is not generally known how near many of these institutions have come to the breaking point from the necessary drying up of the sources of former financial support. Private endowments and annual donations represent the greater part of hospital incomes. No hospital expects to charge the ward patient more than is necessary to meet expenses and a large proportion of these do not pay their share of the cost of service. The case of the Peter Bent Brigham Hospital may be cited as an example of what is occurring in many of these institutions. In order for the hospital to break even in normal times it has to charge the ward patient \$24.00 per week. In 1933 the cost of caring for this patient was \$45.43 per week and the difference of \$21.43 was taken care of by the hospital's endowment. During the last eleven months however sixty-one per cent of the ward patients paid nothing or only a small part of the regular charge.

Meanwhile the income from the endowment has decreased with the result that the hospital is incurring an annual deficit of around \$100,000 a year. Every kind of economy has been instituted and any further slash in expense will mean a severe reduction in the efficiency and quality of service rendered.

On the other hand if the hospital continues to cut into its capital funds it will ultimately have to close. From this it is evident that the plight of those hospitals with little or no endowment must be acute. Already there are a number of charitable hospitals in Boston in which it is almost impossible to obtain admittance for free patients.

The time has passed when one can consider government support for these institutions an academic problem. A decision must be made in the near future, otherwise government support will be a fact and not a question. There is little comfort in this for the man who fears increasing taxation. Institutional care by the government will mean increased taxes for many years to come. One is faced with the alternative of increasing one's largess for a year or two until the crisis is weathered or committing oneself to a policy of larger taxes, the end of which no one can see.

Much of what has just been said can be used against the argument of the doctor who thinks that aid for the hospitals will be of no benefit to him. Many of these men believe that the hospitals are one cause for their troubles. They complain that the hospitals treat patients who could pay for private care, that many patients who have been referred to the hospitals for special studies have not been returned to them, and that hospitals supply treatment at costs which compete unfairly with practicing physicians. Although there may be some justification for these complaints, let us look at the matter from a broader point of view, otherwise we may tend to magnify our injustices and to ignore or minimize the advantages that accrue to us.

Hospitals provide certain advantages to the general practitioner. They take into their wards very sick patients who cannot afford to pay the doctor. Happy should be the doctor who has had no patients suffering from a severe illness with no money to pay his physician. It is a cause of relief to know that when his situation arises there is a hospital to which the patient may be sent and thus save many weary calls with no hope of any monetary return.

The service which hospitals perform in the way of cheap x-ray and metabolic examinations, not to mention many other tests, is of inestimable value to many physicians. These are examinations that are now essential in the practice of medicine. The hospitals supply a helpful service to those individuals who have not the technical training or the time to perform these tests in their offices. One must not forget that many of these services are frequently supplied at cost or at times below cost. Hence, it is apparent that the physician who analyzes his past experiences will find that the hospitals provide him with indispensable help. The growth of hospitals has been rapid through the last twenty years as the result of the development of laboratory apparatus requiring large capital outlays and trained technicians. This rapid growth has raised new problems in medicine which must be solved. But their solution will come more easily and satisfactorily if it is worked out by the medical profession than if the problem is turned over to the government for solution. Although the general practitioner may feel at times that the present heads of hospitals are somewhat autocratic and are more interested in the hospitals than the profession at large, is there any reason to believe that conditions will be better if the profession is administered by a group of government employees? The doubts of any physician on this score may be easily dispelled by consulting his local postman. Government's greatest interest lies in the greatest number of persons and in this instance the doctors will represent the minority. Hence, the interests of the profession as well as the general public will be served better if the hospitals continue to subsist on private donations.

Those who disapprove of the campaign on the grounds that it will be better to have state medicine have two main arguments:

1. That state medicine will give the public better service than the present system.
2. That it will provide the doctor with a more satisfactory life.

The burden of proof lies upon these individuals to show how the government can improve the quality of service. It is hard to understand how or why physicians will be able to organize their services better if they are working for the government than if they are working for themselves. All experience has pointed the other way. It is more difficult to answer the claim that it will provide the physician with a more satisfactory life, because those who advance this argument are the ones who for one cause or another are in financial straits. To them a more satisfactory life means freedom from financial worry. Unfortunately there are to-day a large number of physicians who are either without funds or to whom the future appears entirely uncertain.

But with all sympathy for their present plight, they may be asked to balance very carefully the advantages and disadvantages of the remedy which they advocate. It is a natural impulse for the discouraged one to look for new avenues of escape, but we must remember that present conditions are unusual and will not last indefinitely. What will the physician lose in order to gain temporary financial security? Doctors are individualists above everything else. The three impulses which are most responsible for drawing young men into medicine are the desire to be one's own master, the independent relationship which exists between physician and patient, and the wish to aid others in distress. The medical profession has so far been able to maintain its independence. There is no group of individuals with the possible exception of farmers which has more control over its own destiny. But the freedom and independence of the physician are largely lost if he is told what medicines to prescribe, how many patients he can see, or if he is required to report the reasons for his treatment to a superior. State medicine will ultimately lead to all these requirements whether we like it or not.

The relationship between doctor and patient means much more to us than we sometimes realize. Where else can one find such trust as the layman places in the medical profession? This trust is based on a code of ethics which is the heritage of medicine. Starting with the oath of Hippocrates, it is to the glory of the profession that it has kept to the faith so well. But the strength of ethics is maintained by necessity. Ethics are always higher in a simple than in a complicated community because their need is more apparent. So long as medicine remains a guild or profession, its traditions will remain intact. Make it a government agency and the individual's responsibility will become less evident, the importance of the Hippocratic code will seem less clear, and gradually the layman's trust is sure to dissipate.

If we remove the physician's individuality and his

sense of responsibility to his fellow person, will there be much in medicine to interest him even though he is assured of \$3,000 a year? It is doubtful. Before turning to the government for help we should make a serious effort to solve our problems through our local medical societies.

It may be hoped that from what has been written it becomes evident that this is a critical time for the medical profession. If after due consideration we want the best in medicine to be continued, we must use our efforts to support it as we can.

Support the Boston Emergency Campaign financially so far as possible. At all events support it in spirit. The profession can do much in educating the laity about the purposes and need for the campaign. Make clear what the real condition of our hospitals is and the services they perform to every member of the community. Make clear also what state medicine will mean to individuals as patients.

Point out further that with the leveling of large incomes, smaller incomes must bear the brunt of what the wealthy formerly did. This is something which the community must learn sooner or later. Get these facts across to your patients and you will do a service to yourself, the community and the nation.

E. S. EMBRY JR.

## CORRESPONDENCE

### A BILL FOR THE PROTECTION OF DOCTORS AND HOSPITALS

The Commonwealth of Massachusetts

Senate Chamber Boston

December 26 1934

Editor *New England Journal of Medicine*

I am sending you a copy of the Lien Law\* that I am planning to introduce to aid the Physicians and Hospitals of the State of Massachusetts this coming session of the Legislature. This law is similar to one that has been recently passed by the State of New Jersey and was signed by the Governor of that State on April 30 1934, so you may see that this is of very recent origin. It is much stronger than the Ohio law and the laws of other states. I believe that there are now eight states in the Union that have lien laws to aid Physicians and Hospitals to collect their money due as the result of accident cases. This means not only automobile accidents but all cases arising from accidents. I have sent a copy to Dr. Thomas J. O'Brien in order that he may look it over. It is unnecessary for me to tell you that we must "stir up the dross now connected with the medical profession of Massachusetts who are practicing the profession in our State and sit back and criticize the person who is trying to do something for them. I think it is about time those fellows got busy and did something for themselves.

By helping themselves they would help the profession.

It was positively disgusting last year to see what the reaction was to the bill that I tried to put through to aid the Medical Profession. I came very near getting it through, too. I failed by only one vote to substitute an adverse report that was sent in by the Judiciary Committee. A good many of these men claimed to be too busy but that good old scout, Dr. Halbert Stetson, wasn't too busy to come all the way from Greenfield to that hearing and numerous other men like him came from long distances to appear at the hearing and talk in favor of the bill while many physicians in the city of Boston, where the hearing was held at the State House, were sitting in easy chairs letting someone do their work for them. This will be positively the last time that I will initiate anything for the medical profession while I am in the State House, if I don't get a decent response to my efforts to help the medical profession of Massachusetts. It becomes rather tiresome to do all this hard work and these men who need the law most sit back in their offices and criticize the men who are trying to do something for them.

However I deeply appreciate those physicians and surgeons who did take the time to go in to that hearing. I was told that it was the largest hearing that had been held in favor of the doctor and his problems for years at the State House. There were about 200 there. I wanted at least 1000 present and hope to get that many this year. The physician or surgeon who takes an arrogant, mean and despicable attitude and does not appear at the hearing of a bill like this that has only one objective, to help the whole profession is like "the dog who bites the hand that feeds him" if he stays away and doesn't do anything to help himself. He has no business in the profession at all and should be read out of the society for all the good he does to help himself and his brother practitioners who need the help so badly. He is the person who gets "typed" out of his money in these automobile accident insurance cases as well as the hospitals.

Very sincerely

CHARLES G. MILES

Chairman, Committee on Education.

### MODIFICATIONS IN ASSAY FOR ERGOT

December 31 1934

To the Editor

#### A NEW U.S.P. & INTERIM REVISION OF THE ERGOT ASSAY

I enclose an announcement of the Pharmacopoeial Interim Revision No. 3. This announcement primarily covers modifications in the assay for Ergot and the Fluidextract of Ergot and replaces Interim Revision No. 1.

The first Interim Revision of the Tenth Revision

of the Pharmacopoeia became official on January 1, 1934, and made certain changes in the assay of ergot and its fluidextract, also a modification of the manufacturing method for the fluidextract of ergot. In the first revision, the standard for ergot remained as in the original text, namely, a fluid preparation of ergot.

Since then, however, as a result of further investigation, it has been found desirable to adopt the alkaloidal salt, ergotoxine ethanesulfonate, as the official ergot standard.

For the purpose of insuring uniformity in the ergotoxine ethanesulfonate to be used as the official ergot standard, the U S P Board of Trustees have arranged for the packaging in ampuls, under nitrogen, of a carefully standardized lot of this alkaloidal salt. This Ergot standard may be obtained through the office of the Chairman of the U S P Committee of Revision, 43d Street and Woodland Avenue, Philadelphia, Pa.

By this new revision (No 3) ergot will be required to possess a potency, per gram, equivalent to not less than that of 0.5 milligram of the official standard and the fluidextract must be adjusted to possess a potency, per cubic centimeter, equivalent to that of not less than 0.4 milligram and not more than 0.65 milligram of the standard ergotoxine ethane-sulfonate.

The new monographs for Ergot and Fluidextract of Ergot released in Interim Revision No 3 on January 1, 1935, will become official and enforceable on May 1, 1935. Anyone desiring a copy of this "Interim Revision Announcement No 3" may obtain it by addressing the Chairman, E Fullerton Cook, 43d Street and Woodland Avenue, Philadelphia, accompanying their request with ten cents in stamps to cover printing and distribution.

E FULLERTON COOK, *Chairman,*  
U S P Committee of Revision.

P S Please note that requests for the Interim Revision Announcement No 3 should be accompanied by ten cents. Earlier announcements were sent free but the cost has become prohibitive.

## RECENT DEATHS

COUPAL — JAMES FRANCIS COUPAL, M D, White House physician during the Coolidge Administration, died at Walter Reed Hospital on January 3 after a week's illness. Colonel Coupal was born in Quincy, Mass., January 26, 1884, received his early education in the schools of Beverly and Everett and was graduated from Tufts College in 1906 and from Tufts College Medical School in 1909. He served at the Boston City, Cambridge Relief, and St Elizabeth's Hospitals, beginning practice in Boston in 1910. He began his military career as a captain and assistant surgeon with the 8th Massachusetts regiment, seeing service on the Mexican border. He went overseas with the 26th division, was promoted to major and

after the war was head curator of the Army Medical Museum in Washington.

Dr Coupal left the army in 1929 to engage in private practice in Washington. He was a member of the American Medical Association, the Massachusetts Medical Society, the American Association of Pathologists and Bacteriologists, and author of the Gas Gangrene Chapter of the United States Medical History of the World War.

He is survived by his widow, his mother, and a sister, Mrs Josephine Murphy, of Wakefield.

STORER — MALCOLM STORER, M D, died on January 2 at his home, 380 Beacon Street, Boston, at the age of 77 years. Dr Storer was born in Milton, Mass., the son of Horatio Robinson and Emily E (Gilmore) Storer. He was educated in private schools in Germany, Italy, England and Newport, R. I., subsequently being graduated from Harvard College in the class of 1885 and from the Harvard Medical School in 1889. He began practice in Boston in 1901 and became a gynecologist at the Boston Dispensary, and instructor in gynecology at Harvard Medical School.

Always interested in and an authority on numismatics, Dr Storer was curator of coins and medals of Harvard University and the Massachusetts Historical Society, had charge of medical medals at the Boston Medical Library, and was honorary keeper of coins at the Boston Museum of Fine Arts. He was a former Councilor of the Massachusetts Historical Society, and had been both president and secretary of the Boston Numismatist Society. He is survived by his widow, a daughter, Mrs Egerton B Sawtelle, of Augusta, Maine, two brothers and a sister.

JENNINGS — CURTIS HERMAN JENNINGS, M D, died at his home in Fitchburg on December 31, 1934, after a long illness. He was fifty eight years old. A native of Brookfield, he was graduated from the Springfield High School, and from the Baltimore University School of Medicine in 1902. At the time of his death Dr Jennings was visiting radiologist to the Burbank Hospital in Fitchburg, the Leominster Hospital, the Elliot Community Hospital in Keene, N H., the Peterborough, N H., Hospital, and the Gardner and Ayer Hospitals. He served as a seaman in the Spanish War and as a naval officer in the World War. He is survived by his widow, a son and two daughters.

## OBITUARY

### RESOLUTIONS ON THE DEATH OF PROFESSOR FOLIN

We, members of the Faculty of Medicine of Harvard University, in meeting assembled, do herewith record our sorrow at the death of our colleague, Otto Folin, Hamilton Kuhn Professor of Biological Chemistry.

Since 1907 Professor Folin had been a member of this Faculty sharing in its deliberations and contributing to its discussions with the wisdom of a well-trained mind. Quietly forcibly with clarity of expression and a touch of humor was it his custom to share with us his opinions on matters under consideration by this Faculty his words always carried weight we valued his counsels we knew the unselfishness of the man who spoke and the inherent modesty of one who never sought self-aggrandizement.

Professor Folin, himself a recognized authority in his chosen field of biochemical investigation, was the ideal leader of an important department in this Medical School. Here he taught to class after class of medical students the facts and methods of a science that is of great importance to medicine and to them he gave the example of accuracy in methods of obtaining data to be used in the study and care of patients. To him came graduate pupils to be trained in investigation that they in turn, might become teachers of students and seekers after greater knowledge of the chemical relationships of health and disease in man and animals. His pupils spread widely his influence into many laboratories for the betterment of mankind.

We, his colleagues, pay tribute to the quality of the man and the significant importance of his contributions to biochemistry particularly the development and application of methods of microanalysis of body fluids and tissues. We recognize his leadership. We revere the memory of our colleague. Long will his influence be felt in the Harvard Medical School.

What the Medical School is to-day is a mosaic of the lives of those who in the years since its founding have been of it all of the brilliantly colored bits that make up this picture are attributes of the work and character of the men who have been members of its Faculty. Professor Folin had added gold and purple to the mosaic that we cherish.

To Professor Folin's wife and children we tender our deep-felt sympathy in their sadness and sorrow.

## NOTICES

### CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 P.M. on Thursday January 17 in the Amphitheatre of the Peter Bent Brigham Hospital Dr Henry A. Christian Physician-in-Chief Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School will give a medical clinic. To it are cordially invited practitioners and medical students. These clinics will be repeated on Thursdays, until May.

On Saturdays in the wards of the Peter Bent Brigham Hospital from 10 to 12 staff rounds will be conducted by Dr Christian. These are open to all physicians.

## REMOVALS

JOHN B. HAWES, 2nd M.D., and MOSES J. STONE, M.D. announce the removal of their offices to 330 Dartmouth Street, Boston.

GEORGE SCHWARTZ, M.D. announced the removal of his office to 311 Commonwealth Avenue Boston.

DAVID B. STEARNS M.D. announces the removal of his office to 485 Commonwealth Avenue, Boston.

## ERRATUM

In the article "Rheumatic Heart Disease in Early Childhood" by James Alexander Lyon, M.D., issue of December 27 1934, page 1192, first column thirteenth line, the word "theocalcinc" was misspelled. The sentence should have read

In these instances theocalcinc and the salicylates are the drugs of selection.

## NOTICES OF MEETINGS

### SURGEONS TO MEET IN JACKSONVILLE FLORIDA

The Southeastern Surgical Congress, through its secretary Dr B. T. Beasley announces that the sixth annual assembly of the Congress will be held in Jacksonville, Florida March 11, 12 and 13 1935. The Congress has met previously in Atlanta, Birmingham and Nashville.

The states composing the Congress are Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. A record attendance is anticipated at the Jacksonville meeting. Since March is the most desirable month to visit the land of flowers, many surgeons will no doubt combine business and pleasure and attend this season of the year.

Some of the most distinguished surgeons in the country representing the different surgical specialties have been invited to appear on the program. A partial list of those who have already accepted places is as follows: Drs. Walter C. Alvarez, Parry Bromberg, Hugh Cabot, Willis C. Campbell, George W. Crile, John F. Erdmann, Paul Flotow, Ralph Green, Arthur Hertlitz, C. Jeff Miller, Alton Ochsner, J. C. Patterson, J. Knox Simpson, J. W. Snyder and W. A. Weldon. More than twenty others will be listed when the program is completed. Look for the completed program which will be mailed about February 15, 1935.

For information address Dr B. T. Beasley Secretary Treasurer 1019 Doctors Building Atlanta, Ga.

### ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Essex North District Medical Society will hold its ninety fourth semi-annual meeting on Wednesday January 16 at Shawsheen Manor. Shawsheen Manor is at the junction of routes 133 and 28. The telephone number is Andover 860.

Dinner will be at 12:30 P.M., and will be followed

by the business meeting, at which Douglass V Brown of the Harvard School of Public Health will talk on British Health Insurance

and Their Relationship to Gastroscopy, by Dr Richard Schatzki, Massachusetts General Hospital  
**MARSHALL N FULTON, M D, Secretary**

#### NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The next meeting of the New England Ophthalmological Society will be held on Tuesday, January 15, 1935, at the Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston.

##### PROGRAM

9 00 A.M Clinic and operating room  
11 30 A.M Neuro-ophthalmological Conference  
4 00 P.M Presentation of Muscle Cases These will be discussed by Professor Bielschowsky

##### Evening Program

8 00 P.M

Annual meeting Election of Officers

##### Papers

1 Studies of Blood Fat in Two Cases of Lipaemia Retinalis Dr Alexander Marble  
2 Congenital and Acquired Anomalies in Fusion. Professor A. Bielschowsky

**BENJAMIN SACHS, M D, Secretary**

#### NEW ENGLAND PHYSICAL THERAPY SOCIETY

The second lecture on Medical Electricity by Dr L. L Campbell will be presented at the meeting of the New England Physical Therapy Society, 82 East Concord Street, Boston, on January 16, 1935, at 8 P.M.

Physicians and medical students are invited to attend

**ARTHUR H. RING, M D, Secretary**

Arlington

#### MASSACHUSETTS GENERAL HOSPITAL

##### CLINICAL MEETING—THURSDAY, JANUARY 17, 1935

Moseley Memorial Building

8 15 10 00 P.M

##### PROGRAM

1. Asthma in Children—Edward S O'Keefe, M.D
2. Eczema—B Thurber Guild, M.D
3. Skin Tests—Abraham Colmes, M.D
4. Common Allergens—F M Rackemann, M.D  
Committee on Hospital Meetings,

**ARTHUR W ALLEN, Chairman,  
WILLIAM B BREED, Secretary**

#### HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) Tuesday evening, January 22, at 8 15 P.M.

##### PROGRAM

Presentation of Cases

Gastroscopy and Optic Esophagoscopy, by Dr J Schloss, New England Medical Center

X-Ray Findings in Finer Lesions of the Stomach

#### MASSACHUSETTS MEMORIAL HOSPITALS

There will be a meeting of the Surgical Section in the Ladies' Aid Room (former nurses' dining room), Talbot Memorial, 82 East Concord Street, on Friday, January 11, 1935, at 12 noon

Dr Mild C Green will present a case of Buerger's Disease

Dr Ensio K. F Ronka will read a paper on Primary Carcinoma of the Liver with presentation of two cases

Dr Charles F Branch, the Pathologist, will discuss the above papers

**MILO C GREEN, Secretary**

#### CLOVER HILL HOSPITAL

The next medical meeting of the Clover Hill Hospital will be held in the reception room of the hospital at 161 Berkeley Street, Lawrence, on Thursday evening, January 17, at 8 30 P.M.

The speaker of the evening will be Frederick L. Good, M.D., of Boston, Professor of Clinical Obstetrics at Tufts College Medical School

His subject will be "Maternal Mortality" What Can We Do to Lower It?"

The lecture will be illustrated with lantern slides Discussion will follow All physicians of Lawrence and vicinity are cordially invited to attend

**N F DECESARE, M.D., Chairman**

#### PLYMOUTH DISTRICT MEDICAL SOCIETY

The next meeting of the Plymouth District Medical Society will be held at the Goddard Hospital, Brockton, January 17, at 6 00 P.M.

##### PROGRAM

"Present Status of Medical Economics" by Dr Reginald Fitz, Boston

Dr William H Robey, President of the Massachusetts Medical Society, will also speak.

Dinner will be served at the hospital

**GEOGE A. MOORE, M.D., Secretary**

#### SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

##### CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, JANUARY 14, 1935

Monday, January 14—

\*8 30 A.M. Dr Christian Lecture and clinic on Heart Disease Peter Bent Brigham Hospital

Tuesday, January 15—

All day session, New England Ophthalmological Society See notice elsewhere on this page

\*12 M South End Medical Club 554 Columbus Avenue, Boston.

Wednesday, January 16—

12 30-4 P.M. Ward Visit (Pediatrics), Massachusetts Eye and Ear Infirmary

4-5 P.M. Seminar Pediatrics Massachusetts General Hospital, Pediatric Laboratory

8 P.M. New England Physical Therapy Society at 1. East Concord Street, Boston.

**Thursday January 17—**

12 M. Clinico-Pathological Conference. Massachusetts General Hospital.

12 M. Clinico-Pathological Conference. Children's Hospital.

3:30 P.M. Medical Clinic, Dr Christian Peter Bent Brigham Hospital.

4:30 P.M. Surgical Clinic. Children's Hospital Amphitheatre.

8:15-10 P.M. Clinical Meeting Massachusetts General Hospital Moseley Memorial Building.

**Friday January 18—**

11:30 M. Clinical Meeting of Children's Medical Staff, Massachusetts General Hospital Ether Dome.

**Saturday January 19—**

\*10-11 A.M. Medical Staff Rounds Dr Christian Peter Bent Brigham Hospital.

\*Open to the medical profession  
1 Open to Fellows of the Massachusetts Medical Society

January 11—William Harvey Society will meet in the Auditorium of the Beth Israel Hospital at 8 P.M.

January 11—Massachusetts Memorial Hospitals. See page 84.

January 14, February 25—Lectures and Clinics on Heart Disease by Dr Christian. See page 85 Issue of January 2.

January 15—South End Medical Club will meet at the Headquarters of the Boston Tuberculosis Association 44 Columbus Avenue Boston at 12 noon.

January 18—New England Ophthalmological Society See page 84

January 18—New England Physical Therapy Society See page 84.

January 17—Clinical Meeting Massachusetts General Hospital. See page 84

January 17—Clinic at the Peter Bent Brigham Hospital. See page 84.

January 17—Clover Hill Hospital. See page 84

January 22—Harvard Medical Society See page 84.

**MASSACHUSETTS DIETETIC ASSOCIATION**

February 12—Tuesday 8 P.M. "Diabetic Children Dr Priscilla White Joelin Diabetic Unit."

March 12—Tuesday 8 P.M. "The Effect of Diet on Anemia." Dr Lewis Diamond, Instructor in Medicine Harvard University Medical School, Associate Physician Children's Hospital.

March 19—Tuesday 8 P.M. Field Trip Visit Store house, First National Stores.

April 9—Tuesday 8 P.M. "Small Hospital Problems." Miss Margaret Copeland, Superintendent, Free Hospital for Women.

March 11, 12, 13—Surgeons to meet in Jacksonville, Florida (Southeastern Surgical Congress). See page 83.

April 29 May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr. E. R. Loveland Executive Secretary 133 135 South 36th Street, Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester N.Y. For details address the Secretary Miss Frances N.A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health Boston Mass.

**DISTRICT MEDICAL SOCIETIES**

**ESEX NORTH DISTRICT MEDICAL SOCIETY**

January 16—See page 84.

The Annual Meeting will be held in May Time place and subject to be announced

E. S. BAGNALL, M.D. Secretary

**FRANKLIN DISTRICT MEDICAL SOCIETY**

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel Greenfield Mass.

CHARLES MOLINE, M.D. Secretary

Sunderland.

**MIDDLESEX EAST DISTRICT MEDICAL SOCIETY**

March 13, 1935—Wakefield.

May 8 1935—Winchester

K. L. MACLACHLAN M.D. Secretary  
1 Bellevue Street, Melrose.

**PLYMOUTH DISTRICT MEDICAL SOCIETY**

January 17—See page 84.

March—Plymouth County Hospital.

April—Lakeview Sanatorium.

**SUFFOLK DISTRICT MEDICAL SOCIETY**

January 23, 1935—General Meeting in association with the Boston Medical Library Speaker and subject to be announced later

March 27 1935—Clinical Meeting at the Boston Lying In Hospital.

April 24, 1935—Clinical Meeting at the Children's Hospital.

The medical profession is cordially invited to attend all of these meetings.

ROBERT L. DeNORMANDIE, M.D. President.  
GEORGE P. REYNOLDS M.D., Secretary.  
HENRY T. HUTCHINS M.D. Boston Medical Library

**WORCESTER DISTRICT MEDICAL SOCIETY**

February 13, 1935—Wednesday evening. Worcester State Hospital Worcester Mass. 6:30 P.M. Dinner 7:30 P.M. Scientific program and business session. Announcement of subjects and speakers to be presented at a later date Dinner complimentary by the Hospital.

March 13, 1935—Wednesday evening. The Memorial Hospital, Worcester Mass. 6:30 P.M. Buffet supper 7:30 P.M. Scientific program and business session. An announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10, 1935—Wednesday evening. Worcester Hahnemann Hospital, Worcester Mass. 6:30 P.M. Dinner 7:30 P.M. Scientific program and business session. An announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening. An annual meeting of the Worcester District Medical Society. The time and place of this meeting will be announced later

ERWIN C. MILLER, M.D. Secretary  
7 Elm Street, Worcester

**BOOKS RECEIVED FOR REVIEW**

Prolapsus du Rectum Carrasco 196 pp. Paris Masson et Cie. 35 fr

The Surgical Clinics of North America. October 1934 Volume 14—Number 5 Lahey Clinic Number 260 pp Philadelphia W. B. Saunders Company \$12.00 per year

Marriage Hygiene Vol 1 No 1, August, 1934 111 pp. Bombay The Times of India Press.

Handedness, Right and Left. Ira S. Wile. 429 pp Boston Lothrop Lee and Shepard Company \$2.75

Periodic Fertility and Sterility in Woman A Natural Method of Birth Control Professor Hermann Knauts. 162 pp. Vienna Wilhelm Maudrich. \$6.00

The Autonomic Diseases of the Rheumatic Syndrome T. M. Rivers. 299 pp. Philadelphia Doran & Company Inc. \$3.00

The 1934 Year Book of Radiology Diagnosis edited by Charles A. Waters. Therapeutics edited by Ira L. Kaplan 512 pp. Chicago The Year Book Publishers, Inc. \$4.50

Treatment by Diet Clifford J. Barborka. 615 pp Philadelphia J. B. Lippincott Company \$5.00

**International Clinics** Edited by Louis Hamman  
Volume IV Forty-Fourth Series, 1934 326 pp  
Philadelphia J B Lippincott Company

**Studies from The Rockefeller Institute for Medical Research Reprints** Volume 90 649 pp New York The Rockefeller Institute for Medical Research, 1934

**What About Sterilization?** Rev Ignatius W Cox, and James J Walsh. A series of eight articles discussing the question from the moral and scientific points of view 31 pp Washington, D C National Catholic Welfare Conference \$15

## BOOK REVIEWS

**Constructive Eugenics and Rational Marriage** By Morris Siegel, M D 196 pp Toronto McClelland & Stewart, Ltd \$2 50

This book aims to present to the intelligent reader some facts about a little-understood subject. It is not a textbook but gives a more or less popular discussion of eugenics together with the author's personal views on a constructive program. It would be disappointing to anyone searching for an exhaustive treatise but it does give an accurate and reasonably comprehensive account suitable for the general public. It has one virtue in not containing the exaggerated or unproved statements so often found in similar popular works. The main criticism is that the meat of the book could have been given in a much more concentrated form without the slightest injury to purpose or subject matter

**Physical Diagnosis** By Richard C Cabot Eleventh Edition 540 pp Baltimore William Wood & Company \$5 00

This is the eleventh edition of a book which has already been accepted as a standard text on Physical Diagnosis, so the reviewer sought to verify the pre-facial promises, rather than to reread material primarily intended for second-year medical students. There is a newly-written chapter on the electrocardiogram which tends to overemphasize its clinical value, but otherwise there seem to be no significant additions. The preface is a little exaggerated because it leads one to anticipate more than he actually finds when he gets inside, for example "Pneumoconiosis is more adequately treated than in former editions, and the more recent knowledge of Pulmonary Embolism has been incorporated." Well—Pneumoconiosis gets eleven lines and a picture, with no mention of silica and Pulmonary Embolism gets ten lines. While this is all part of the edition, one wonders if the successive editions of such a book could not be simplified. The reviewer confesses his preference for a less elaborate treatise on Physical Diagnosis, and would rather see the second-year men learn to study a briefer exposition, such as that published by Buck during the current year. This

is not to be construed as a critical comparison of two books on the same subject. Only one typographical error was seen, the book is well written, very well illustrated, and well printed and bound.

**An Activity Analysis of Nursing** By Ethel Johns and Blanche Pfefferkorn. Prepared under the Auspices of the Committee on the Grading of Nursing Schools 214 pp New York The Nursing Information Bureau of the American Nurses' Schools \$2 00

This publication is the result of a job analysis of nursing by two very competent nurses, Miss Ethel Johns, now Editor of "The Canadian Nurse," and Miss Blanche Pfefferkorn, Director of Studies of the National League of Nursing Education, under the auspices of the Grading Committee. The work of the authors was carried through under the direction and counsel of Prof W W Chatters, Professor of Education and Director of the Bureau of Educational Research of Ohio State University, Professor Elizabeth C Burgess, Associate Professor of Nursing Education, Teachers' College, Columbia University, and Miss Tucker, General Director of the National Organization of Public Health Nursing.

We believe that all interested in nursing school curricula will find this invaluable for reference purposes. We do not know of the existence of so complete and helpful a job analysis in nursing.

**The Compleat Pediatrician Practical, Diagnostic, Therapeutic and Preventive Pediatrics For the Use of Medical Students, Internes, General Practitioners and Pediatricians** By Wilbert C Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University School of Medicine, and Pediatrician, Duke Hospital, Durham, N C Printed by Seeman Printery for Duke University Press, 1934. \$3 75

This little book, its title page styled after Izaak Walton's "The Compleat Angler," is, as the author says in his preface, "an effort to compile and record briefly those practical pediatric facts, which though essential, usually slip from memory, it is an attempt to combine in one volume, the information usually found in several, which should be consulted for more complete study."

It is, in fact, a ready reference book with sections devoted to Symptoms and Signs Diseases, with the eight important features of each listed—Definition, Preventive measures, Incidence, Symptoms and Signs (recapitulated from Chapter I), Differential Diagnosis, Laboratory Tests, Treatment and Prognosis. It is brief, yet encyclopedic in scope, nothing of importance seems to be omitted. "At first glance this book, with its numerous cross reference numbers, resembles a telephone book, and in fact it may serve much the same purpose, i.e., an indexed list of names and other information."

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## NEW ENGLAND SURGICAL SOCIETY

### VAGINAL HYSTERECTOMY\*

BY OLIVER N. EASTMAN, M.D. †

EXTIRPATION of the uterus by way of the vagina instead of the more frequently used abdominal approach appeals to me as the operation of choice in certain pelvic conditions. This conclusion is based on the unbiased consideration of fifty vaginal hysterectomies compared with fifty hysterectomies through an abdominal incision operated by me under similar conditions, in the same hospitals, and during the same period.

Although abdominal hysterectomy has been my routine for a number of years, my first fifty vaginal hysterectomies have been so favorable in comparison that I have selected these in preference to a later series which promise even more favorable results. There seems to be no lack of enthusiasm by the comparatively few surgeons doing this operation, but they comprise a pronounced minority. It is evident that the average surgeon selects the operation to which he has been accustomed, and finds it more convenient to follow a regular routine.

The purpose of this study has been

- (1) To properly classify definite indication for a choice of procedure.
- (2) In order to evaluate the operation in comparison with supravaginal hysterectomy.

To select the abdominal route when the indications are more favorable for a vaginal operation seems illogical. However, most cases can be operated optionally. The choice must be individual, depending upon aptitude, facilities at hand, and experience.

The specific indications for vaginal hysterectomy

- (A) Elderly patients who are classed as poor risks because the operation is less hazardous.
- (B) Cases presenting prolapse or procidentia especially when associated with cystocele because the operation is facilitated and the support can be better reconstructed from below.
- (C) Malignancies of the cervix, to avoid dragging an infected tissue through the peritoneal cavity.

(D) Obese patients with weakened abdominal walls, to obviate the danger of post-operative hernia as well as wound infection.

(E) Cases of subacute pelvic inflammation complicating any condition necessitating a hysterectomy by reason of better drainage and a minimum of visceral manipulation. This reason is evident.

Specific contraindications for vaginal hysterectomy

- (A) A small firmly fixed uterus, high in the pelvis, associated with a small introitus and vagina.
- (B) Cases where abdominal exploration is ad visable.
- (C) Where other abdominal surgery is required especially ventral hernia.

Contrary to general opinion, a moderate to a large-sized myofibroma is scarcely a contra indication. A fibroma reaching to the level of the umbilicus is easily resected by morcellation to reduce the size of the tumor and readily effect a delivery through the vagina. Cystic ovaries and hydrosalpinx as a rule offer no difficulty in their removal. Visualization of the appendix and its removal are usually not difficult with the patient in the Trendelenburg position. A previous ventral fixation is not usually a contraindication. The pedicle is not vascular and can be severed by feel if not actually visualized. Five of the patients operated vaginally had had a previous ventral fixation from three to twenty two years' standing. Each of these patients had a cervix which protruded from the vagina due partly to elongation and partly to weakening of the paracervical support.

Should one meet unforeseen complications while doing a vaginal hysterectomy, there would be no contraindication in adding an abdominal incision though I have not encountered the necessity of such. On the other hand, to add a vaginal operation to an already operated abdomen would be fraught with danger of pulling loose a ligature in a field not practically visualized from below. In many cases where a complete abdominal hysterectomy is advisable the cervical portion is operated advantageously vaginally although a comparison of fifty cases

Read at the Annual Meeting of the New England Surgical Society at Burlington, Vermont, September 9, 1934.

\*Eastman, O. N.—Associate Professor of Obstetrics, University of Vermont College of Medicine. For record and address of author see "This Week's Issue," page 134.

of each scarcely carries convincing conclusion, yet it is at least suggestive in its purport

Of the vaginally operated patients, eleven were over sixty years of age, the youngest being twenty-six and the oldest seventy, the average being forty-one as compared with one patient over sixty, the youngest twenty-four, the average forty and one-tenth years in the supravaginally operated patients

Of special interest is the morbidity noted. The vaginal group presented a lower average temperature especially in the range between one hundred and one hundred and one. It was noted that thirty-four patients ran a temperature between these points for less than two days while forty-five patients of the supravaginally operated patients averaged a similar temperature for five and seven-tenths days. This, I believe, can be accounted for by the fact that the vaginally operated patients were drained from below lessening the absorption of serum. The vaginally operated patients were decidedly less uncomfortable. Complications were less frequently noted. Three cases of postoperative cystitis, one case of pelvic peritonitis, one case of postoperative pneumonia, and one case of cardiac collapse occurred. The last two patients died establishing a four per cent mortality. The complications occurring in the supravaginally operated group consisted of one case of phlegmasia alba dolens, two cases of fat necrosis, three cases of postoperative cystitis, one case of cardiac collapse, and dynamic ileus developed with failing compensation of the heart in one case. The last two patients died establishing a four per cent mortality. Owing to the fact that the cases considered poor surgical risks were operated by the vaginal route and it is probable that both patients dying in the vaginal group would have doubtless lost their lives by an abdominal operation, a much larger series of cases would be required to establish a significant mortality rate. Hospitalization averaged seventeen and one-tenth days where the supravaginally operated cases averaged nineteen days. This is quite significant because of the larger number of elderly women who were operated vaginally. Many of the patients were discharged on the fourteenth day postoperative, and most of them felt well enough so that they wished to be discharged at that time providing they were permitted to be out of bed as early as the ninth day.

Of the vaginally operated patients the indications were procidentia in twenty-one cases, cystocele in twenty-five cases, rectocele in twenty-three cases, lacerated infected cervix in twenty cases, fibroma of the uterus in twenty cases, metrorrhagia in seven cases, malignancy in three cases, uterine polyp in six cases, for sterilization in two cases. Such complications as hydrosalpinx, cystic ovaries, adhesions, and enteroliths in the appendix occurred and were

operated with the vaginal hysterectomy. The indications found in the supravaginally operated group were similar except that large fibromas and complications such as large ovarian cysts occurred more frequently, and especially was this means of approach utilized where little or no vaginal operating was required.

The technic employed in this operation varied little in minor details from the classical operation. Special pains were taken to disinfect the field of operation by painting with iodine followed by an alcohol sponge. All infected cervices were cauterized, the cervical canal was closed where infection or malignancy was in evidence, an incision was made across the top and bottom of the cervix at a point where the smooth cervical mucosa stands out in contrast to the transverse fold of the vaginal surface. A suture of chromic No 2 catches the lateral vaginal mucosa before the cervix is completely circumscribed. This not only catches vessels that would bleed but serves as an anchor stitch to unite the paracervical support. After the removal of the uterus with the patient in Trendelenburg position, inspection of the pelvic cavity is made practical and further operating may be done as indicated. The anterior and posterior layers of peritoneum are closed with interrupted sutures around a flat rubber drain which is to be removed on the third postoperative day. The round and broad ligaments are sutured to the paracervical support. These are tied to the anchor suture at the lateral vaginal incision and tied again to its fellow on the opposite side. Vaginal mucosa is sutured around the drain with interrupted chromic sutures and a strip of sterile gauze wrung out in alcohol is united to the distal end of the rubber drain, one end protruding between the labia to facilitate removal on the third day. Gauze was used earlier to drain the peritoneal cavity, but proved unsatisfactory because undue pain was caused the patient by its removal.

Sterile douches are given after the fifth day if required. Catheterization is usually required unless a retention catheter is used. This is not a routine, but is serviceable where considerable bladder manipulation has been necessary.

#### CONCLUSIONS

1. Vaginal hysterectomy is less hazardous than supravaginal
2. Shortened morbidity results
3. Markedly less discomfort during the period of convalescence is usual
4. There is less likelihood of postoperative adhesions
5. Eliminates the danger of postoperative hernia and abdominal wound infection
6. Utilization of transcervical support is facilitated

7 A complete hysterectomy is assured by the vaginal operation too frequently neglected in the supravaginal operation.

### DISCUSSION

Dr. CHARLES LEWIS LARKIN Waterbury Conn In these days of rapid fire changes in ones beliefs, one becomes more or less accustomed to performing mental gymnastics in vain attempts to keep up with the times but there are certain beliefs that are backed by such undisputed facts and by years of experience that they become fixed as axioms. The question of the merits of abdominal hysterectomy versus vaginal hysterectomy has been and still is a settled belief so far as I am concerned.

My instruction as a medical student and my fifteen years of active gynecological practice have more firmly strengthened my belief that abdominal hysterectomy is by far the more preferable procedure in the vast majority of cases. I do believe that there is a limited field for the use of the vaginal route. In this field, or group I would include the very obese woman who has a large introitus and has uterine pathology limited to the size of a two months pregnancy and not complicated by any pathology in the adnexa. I would also include in this group patients with procidentia complicated by cystocele, when it is found that the uterus is too large to transpose between the bladder and the vaginal mucosa. But of late, I have not found it necessary to perform a hysterectomy even on these cases of procidentia with a large uterus because I now make it a practice to insert radium into the uterine cavity and then wait six to eight weeks for involution of the uterus to occur before performing the interposition operation the uterus being utilized as a support.

Dr. William P. Graves our late lamented member had been primarily instrumental in shaping my beliefs on this question. He taught and wrote that "compared with a properly executed abdominal hysterectomy the removal of the uterus by way of the vagina had no advantages and that vaginal hysterectomy could not be done more rapidly and there was no less shock or loss of blood." In his standard work on gynecology in his fourth edition, Doctor Graves after years of vast experience and conscientious work, made the above statement and then dismissed the subject with a brief description of his operation of choice. He did not even catalogue the advantages of the abdominal route, but assumed apparently that the advantages are self-evident.

Doctor Eastman has made the statement that elderly patients who are classed as poor risks should have vaginal hysterectomy performed, rather than hysterectomy by the abdominal route. But he offers no proof to substantiate this statement. He has had two deaths in his series of fifty vaginal hysterectomies a mortality of four per cent, but he does not mention the age of these patients. During the past fifteen years I have performed two hundred and forty five abdominal hysterectomies on women of various sizes and shapes on young and old and on women suffering various degrees of decrepitude. In this series of consecutive cases two deaths have occurred one from acute respiratory collapse, and the other from general peritonitis. Their ages were thirty nine and fifty two years, respectively. They were of medium height and medium weight. This mortality rate of less than one per cent is about the usual rate that occurs in the hands of competent surgeons, performing well-executed abdominal hysterectomies. This mortality rate is more favorable than that reported by Doc-

tor Eastman for his series of vaginal hysterectomy and it is all the more favorable when one considers that even the most enthusiastic advocate of vaginal hysterectomy namely W. W. Babcock of Philadelphia does not deem it wise to perform vaginal hysterectomies on the most serious cases of pelvic pathology which include about 20 per cent of all hysterectomies. Doctor Eastman has said that malignancies of the cervix should be handled by vaginal hysterectomy.

Doctor Eastman also has cited his morbidity rates and points out that the morbidity is slightly more favorable in his series of vaginal hysterectomy. This may be true but it is of little importance. The main question except for that of immediate mortality is whether these patients will enjoy good health following their operation. To answer this question, one might well ask which operation causes the most serious postoperative complications that will interfere with future health.

To answer this question I will recite but one complication Dr. G. Gelhorn writing in the October 1930 number of *Surgery Gynecology and Obstetrics* mentioned that two vesical vaginal fistulas occurred following eighty two cases of vaginal hysterectomy. These two cases happened in the series of a man who is a staunch vaginal hysterectomist and if two cases happen in a series such as this goodness knows how many cases will occur if the general run of surgeons take up this road of approach. To my way of thinking one case alone with this complication is enough to condemn the operation. Dr. W. W. Babcock in the February 1930 number of *Surgery Gynecology and Obstetrics* is very enthusiastic about vaginal hysterectomy and its possibilities. He is a clever surgeon but has nevertheless performed but eighty per cent of his pelvic operations through the vaginal route. He apparently is able to remove by this route any pelvic pathology ranging from a ruptured ectopic gestation to a fibroid the size of a seven month pregnancy. But he does stress the point that one must accustom oneself to an operating field which at times is no larger than the size of a fifty-cent piece. I can imagine the complications that would occur if the average surgeon attempted to operate through such a restricted field. Doctor Babcock and Doctor Eastman stress the fact that morcellation of the uterus and other structures is often necessary, in order to remove the pelvic pathology through the small vaginal opening. This procedure also would condemn the operation for one never knows when the supposedly benign fibroid has already undergone malignant changes or when a supposedly benign cyst is harboring within itself a most malignant, cancerous process. To morcellate such structures, while still within the pelvic cavity is to say the least, certainly not good surgery.

In conclusion I wish to cite a few of the apparent advantages of abdominal hysterectomy over the vaginal hysterectomy. First, it is a procedure that is standardized and is more readily executed by the average surgeon. Secondly it is a procedure that gives a very low mortality ratio. Thirdly the abdominal incision can be made large enough so that the whole field of pelvic pathology can be visualized. Fourthly very few serious complications follow this procedure. Fifthly it allows an operator to change his mind when a mistake in diagnosis has been made and he finds that a simple conservative procedure and not a radical one is necessary for the cure of the patient. Sixthly it allows the easy removal of the pathological adnexa and the diseased appendix.

Evidently Doctor Eastman also believes that vaginal hysterectomy should be performed in a much larger percentage of cases that need hysterectomies. His indications for vaginal hysterectomy are as follows:

- (A) Elderly persons who are classed as poor risks because the operation is less hazardous Personally I have found that elderly patients who need hysterectomies stand the operation very well The only two deaths I have had were aged thirty-nine and fiftytwo
- (B) Pilocidencia cases, especially those associated with cystocele because Doctor Eastman believes that they can be reconstructed better from below I believe that these cases can be reconstructed better by leaving in the uterus and doing the more simple inter-position operation
- (C) Doctor Eastman has listed malignancies of the cervix an indication [Certainly if malignancies of the cervix are to be operated]

upon it would be much better to remove the uterus by way of the vagina but the consensus seems to be that the malignancies of the cervix are much better handled by deep x-ray therapy and radium implantation ]

(D) Obese patients because there is no danger of postoperative abdominal hernia I believe there is a definite field for vaginal hysterectomy in obese patients

(E) Cases of subacute pelvic inflammation This last indication does sound reasonable but most of these cases of subacute pelvic inflammation are in reality chronic inflammations following some previous acute attacks Usually there are complicating pelvic adhesions present, the tubes and ovaries being plastered down in the posterior cul de-sac

## GYNECOLOGICAL PROBLEMS OF INTEREST TO THE SURGEON IN GENERAL PRACTICE\*

BY ARTHUR H. MORSE, M.D.†

THE following paper considers certain subjects which it is hoped may prove of interest to those who, although primarily engaged in general surgery, are called upon occasionally to deal with problems affecting the reproductive tract in women It is proposed first to review the theories recently advanced with respect to the etiology of myomata and of endometrial hyperplasia, secondly to touch upon the treatment of myomata as complications of pregnancy, and the treatment of bleeding associated with endometrial hyperplasia, and finally to consider the symptoms and diagnosis of the rupture of ovarian follicular cysts associated with the effusion of small quantities of blood into the peritoneal cavity

Anatomical and histological studies have so far left us in the dark with respect to the etiology of myomata of the uterus However since these neoplasms are in some instances chronologically related to the period of the reproductive process, the question arises as to the possible significance of the ovarian hormones in the etiology of these tumors It is conceivable that a comparative study of the ovaries and of the hyperplastic endometrium associated with bleeding myomata might cast some light upon this problem Witherspoon had this thought in mind in two recent contributions upon this subject

Basing his argument upon the results of work already published, and upon his own clinical and experimental observations, Witherspoon concludes that hyperplasia of the endometrium is the result of the unopposed and continued action of estrin, in the absence of the influence of the corpus luteum Again, because the uterus as a whole is involved in the reproductive process, it seems logical to deduce that the action

of estrin is not limited solely to the endometrium, but that the myometrium is also involved, especially if there be pathological stimulation to the myometrial tissue at the same time that the endometrium is abnormally stimulated to hyperplastic formation However, since the increase in size of myomata is generally a gradual process, it would seem logical to assume that if these growths are the result of the unopposed stimulation of the myometrium by estrin, that their appearance would be slower than the hyperplastic endometrial changes

In a more recent paper Witherspoon suggests that myomata occur with greater frequency in the Negroes because chronic pelvic infection resulting in ovarian damage, dysfunction, and an abnormal ovarian secretion, is more common in the colored than in the white woman In the absence of pelvic infection and its associated pathological changes, ovarian follicle cyst formation is perhaps the result of a greater glandular disturbance involving the entire organism

Edward Allen has recently advanced a similar view with respect to the origin of fibromyomata and of endometriosis both of which he regards as a manifestation of cellular hyperplasia caused by glandular dysfunction In addition he suggests that the gap between benign and malignant tumors of the pelvic organs may be only a qualitative or quantitative measure of hormonal action

I hasten to state that the postulate regarding the etiology of myomata is as yet unsupported by experimental proof On the other hand the view with respect to the part played by the unopposed action of estrin in the causation of endometrial hyperplasia is favored by certain clinical and experimental evidence For example, Fluhmann has demonstrated an excessive production of estrin during the course of endometrial

\*Read at the Annual Meeting of the New England Surgical Society at Burlington, Vermont September 29, 1934

†Morse, A. H.—Professor of Obstetrics and Gynecology Yale School of Medicine For record and address of author see This Week's Issue page 123

hyperplasia, and has suggested the name of "hyperestrinism" to describe the condition. Again Burch, Williams and Cunningham injected into spayed mice and rats follicular fluid withdrawn from cystic ovaries devoid of corpora lutea, which had been excised from two individuals presenting hyperplasia of the endometrium. The changes previously found in the endometrium of each patient were similar in many respects to the changes produced in the uterus of the experimental animals receiving the fluid from these patients.

In a second series of experiments Burch, Wolfe and Cunningham injected spayed rats and guinea pigs with varying amounts of estrin for an average period of three weeks the daily average injection consisting of 25 rat units. A large percentage of the experimental animals showed characteristic cellular reactions of the endometrium as well as a Swiss cheese dilatation of the glands, similar to those of human hyperplasia of the endometrium. A further series of experiments was reported in which hyperplasia was brought about as a result of continued estrus produced by partial castration.

Definite experimental evidence that the unopposed and prolonged activity of estrin can produce an endometrial hyperplasia sufficiently pronounced to justify the designation "Swiss cheese" hyperplasia, is up to the present available only for the guinea pig. During the past year, however, Solly Zuckerman, working in our laboratory, has by the injection of estrin into a previously ovariectomized chimpanzee produced a degree of hyperplasia and glandular dilatation far greater than has previously been described as following the injection of estrin into monkeys. The experimental findings of the investigators mentioned, coupled with the fact that corpora lutea are absent from the ovaries of many women in whom menorrhagia is associated with a glandular hyperplasia of the endometrium, support the hypothesis that the unopposed action of estrin plays an important rôle in the production of this lesion in the human being.

Turning now to the clinical significance of the lesions in question, myomata as complications of pregnancy occasionally offer problems of differential diagnosis and of surgical treatment. Perhaps the most frequent error is to mistake a uterus enlarged to the size of a normal three or four months' pregnancy for a soft symmetrical intramural neoplasm. This is particularly likely to be true if a cervical adenoma or polyp is present in the cervical canal. Under such circumstances as a result of the physiologically increased vascularization of the pelvic organs incident to pregnancy, such a polyp may bleed freely and this symptom may lead to an error in diagnosis. Thus if the history of pregnancy is not clear, and if there has been continued uterine bleeding the softened en-

larged uterus may be interpreted as a degenerating uterine neoplasm and the polyp, the real cause of the bleeding be discovered only following the excision of a normally pregnant uterus. Such an error would, of course, be obviated had the cervix been carefully examined with a speculum. An additional check on the diagnosis is also afforded by resorting to a biological test of pregnancy such as that devised by Zondek or by Friedman.

The significance of myomata in association with pregnancy depends upon the situation and size of the neoplasm. Thus subserous tumors with only short pedicles, and situated in the fundal portion of the uterus, rarely give rise to difficulty during pregnancy and labor, and generally need no surgical attention. On the other hand intramural growths located in the lower uterine segment, or in the cervix, may so obstruct the descent of the fetal head as to necessitate delivery by the abdominal route followed by hysterectomy. Again a submucous growth, which during pregnancy and labor has produced no symptoms, may as a result of uterine contractions following delivery be forced from its muscular bed and present at the external os as a bleeding polypoid mass which demands surgical removal. During the puerperium also myomata may undergo degenerative or gangrenous changes which if not controlled by surgery, threaten the life of the patient.

Faced by such symptoms as extreme distention, serious hemorrhage or evidences of impaction before the fetus has attained viability, a laparotomy is indicated the subsequent procedure then depending upon conditions which are found and upon the judgment of the operator. If multiple myomata are present, a supravaginal hysterectomy is indicated without reference to the duration of pregnancy. On the other hand myomata, which early in pregnancy are situated in the vicinity of the pelvic inlet, may rise with the enlarging uterus to such a point that there is no indication for surgical interference to relieve dystocia.

With respect to the control of uterine bleeding associated with endometrial hyperplasia the therapeutic value of biological products now available is still undetermined. I am not unmindful that competent observers have reported favorable results from the use of anterior pituitary like extracts prepared from the urine of pregnant women. On the other hand the hope of stimulating luteinization of the ovaries by the administration of these substances and thus counteracting the effect of estrin remains unfulfilled. Thus Geist studying the ovaries of women to whom an anterior pituitary like substance had been previously administered failed to find evidences of luteinization but rather an arrest of follicular development. Carl Johnson

employing an extract of this character in our laboratory, reached similar conclusions in his experimental study in monkeys. It is our feeling, therefore, particularly since the effect of the prolonged administration of such extracts is unknown, that bleeding associated with endometrial hyperplasia is most satisfactorily treated by repeated curettage, the judicious administration of radium or, in the more extreme instances, by hysterectomy.

Having considered certain theoretical and practical aspects of myomata and endometrial hyperplasia, I turn now to the interpretation of symptoms arising from the rupture of an ovarian follicle associated with the discharge of follicular fluid and the effusion of a small quantity of blood into the peritoneal cavity. Pratt, who for a number of years has been interested in the experimental and clinical physiology of the ovary, has recently studied a series of patients with this lesion. The symptoms and signs which he reports are quite in accord with those observed in a patient recently seen in consultation.

The woman, unmarried and twenty seven years of age, was suddenly seized with violent pain in the lower abdomen, nausea and severe vomiting. Two hours later upon admission to the hospital, the pain had almost entirely subsided and there was neither nausea nor vomiting. The temperature was but slightly above normal, the white blood count 22,000 and the red blood count slightly over four million. Urinary examination was negative. Physical examination at this time was likewise negative excepting very slight sensitiveness low in the left quadrant. Upon the morning following admission the temperature was normal and the white count had fallen to 10,500. The patient felt entirely well and there was neither pain nor sensitiveness upon abdominal palpation. It was noted that this attack had occurred in the middle of the intermenstrual interval.

Exactly twenty eight days later there was a recurrence of sharp generalized abdominal pain associated with nausea and vomiting. The patient was readmitted to the hospital where the temperature was found to be normal and the pulse only slightly elevated. Respirations were shallow and thoracic in type. The thighs were flexed and the abdominal wall was rigid. Palpation revealed tenderness in both lower quadrants slightly more marked upon the left. Examination of the urine was again negative. The red count was again above four million. The white count was 20,000. When seen three hours after the onset of this second attack, the patient was more comfortable. There was no abdominal distention but some muscular rigidity was noted. No abdominal mass was demonstrable. Rectal examination revealed the uterus in anterior position and upon lifting the cervix forward the patient complained of pain. There were no palpable adnexal masses.

The temperature, which upon admission was normal, rose later to 101° but fell within eight hours to normal.

The day following the onset of the attack the white count was within normal limits, symptoms and signs of abdominal pathology were absent and the patient was discharged. Since these episodes she has been leading an active life and has been perfectly well. The character of the attack in this patient, the rapid subsidence of symptoms, and

the fact that the onset of pain occurred midway in the intermenstrual interval, justify the diagnosis of a rupture of a Graafian follicle with slight bleeding into the peritoneal cavity.

Tubal pregnancy terminating either in intra- or extratubal rupture is commonly associated with a greater degree of intraperitoneal bleeding than is rupture of an ovarian follicle, while the presence of an ovarian cyst in which the pedicle has become twisted can generally be diagnosed from the careful analysis of the patient's history together with the local physical findings. Moreover symptoms referable to these lesions do not necessarily bear any relation to the menstrual cycle. The most important problem therefore is to differentiate the symptoms of follicular rupture and those due to appendicitis. As Pratt points out, when the appendix is involved the pain is generally more intense, the temperature more elevated, and the leucocyte count higher. Intrapertitoneal reactions, due to bleeding from the follicle, usually produce maximum tenderness below McBurney's point and confirmation of the location of the lesion in the ovary may be obtained during bimanual palpation of the pelvic structures. Moreover the rapid clearing of the symptoms and signs, as in the patient whose history was quoted above, is less consonant with an inflammatory lesion of the appendix than with follicular rupture. Negative findings in the gastro-intestinal tract but positive findings in the ovary have been demonstrated at operation in certain women still within the active reproductive period who, in the middle or in the latter half of the intermenstrual interval, complain of an onset of pain in the lower abdomen associated with anorexia, nausea and occasional vomiting, a slight elevation of temperature and a mild leucocytosis. It is advisable, therefore, to consider the possibility that in women of this age such symptoms may depend, not upon an inflammation of the appendix, but rather upon an intra-abdominal irritation due to an effusion of blood from a ruptured follicle. In the latter instance the fluid and blood will be gradually absorbed and the patient will suffer no untoward consequences.

In recapitulation the present article reviews the theories recently advanced regarding the etiology of myomata of the uterus and of endometrial hyperplasia, touches upon the treatment of myomata as complications of pregnancy and the treatment of bleeding associated with endometrial hyperplasia and finally considers the symptoms and diagnosis of rupture of ovarian follicular cysts associated with the effusion of small quantities of blood into the peritoneal cavity.

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## DISCUSSION

Dr. STEPHEN RUSHWORTH, Boston Mass. *Mr President and Members of the Society*—I should like to say first a word about the vaginal hysterectomy. I am very glad that there is increased interest in this operation.

The limitations of the operation are considerable, but within the limitations it is in the opinion of many persons who have had experience with both types of operation, a better operation than the abdominal. It is more satisfactory so far as the immediate and the late results are concerned.

I shall not take the time to define those limitations because I want to refer particularly to the paper of Dr Morse which I was asked to discuss.

Lord Kelvin said that our real knowledge begins when we measure or can measure and make quantitative determinations of the things with which we are dealing. I think it will be a happy day for medicine and certainly a great relief to some individuals when there is evidence that in general the endocrinologist recognizes that this dictum of Lord Kelvin has particular application to the field of his investigation.

At the present time we are in a kind of jungle of theories with reference to the glandular internal secretions and their part in the body activity and what we need is more facts not that theories are not useful as well as necessary but there is a great lack of well-substantiated evidence and fact.

There was one point in Dr Morse's paper on which I wish he would give us further illumination. He stated that myomata of the uterus occur chronologically or are chronologically related to the most active period of the reproductive process. That is in disagreement with the opinion that is generally held and has been generally held.

About the cause of myomata we know little, but it is generally held that myomata begin to cause trouble between the ages of thirty five and fifty and approximately one-third of this group or 25 per cent of the whole number of cases, come for treatment between thirty five and forty, approximately a second third between forty and forty five and the last third of the three-quarters occur between forty five and fifty and about 25 per cent before thirty five and in the later periods of life.

It is also well recognized that the reproductive processes are more active before thirty five and it is generally thought that as the reproductive processes diminish in activity the incidence of myomata increases.

I wish that Dr Morse would give us some of the statistical bases for his statement in regard to the chronological prevalence of this condition.

The theory that estrin overactivity in the body and not opposed by the corpus luteum, is the cause of hyperplasia of the endometrium, fails to meet with several facts, and the first is that in the condition in which there is relatively a small amount

of estrin active in the body and the corpus luteum is especially active there is the greatest hyperplasia of the region namely in pregnancy. In early pregnancy the endometrium is markedly increased and in the ordinary individual the corpus luteum is so large that sometimes we call it the corpus luteum of pregnancy as though it were something different.

The second fact is that in myomata of the uterus and in cases of multiple forms we find marked differences in the endometrium in some parts markedly hyperplastic, and other parts hypertrophic. If it is estrin why isn't it the same in the same uterus that causes the hyperplasia. In some cases where we find the greatest hyperplasia in the non pregnant state the patients are without myomata and no obvious disease of the ovary can be detected. Sometimes those cases have as a symptom excessive bleeding but there are these three groups of cases that need to be explained and which this theory has not yet covered.

We recognize that, in certain cases the mechanical condition of the pelvic organs which has produced congestion or is associated with marked congestion leads to overgrowth of endometrium apparently from merely increased blood supply so we have to think of a number of other factors that may enter into the hyperplasia of the endometrium.

I would say one or two positive instead of negative words concerning the subject of the paper rather than the paper itself. I make two suggestions which from the point of view of the gynecologist seem very simple and almost trifling yet I have found a considerable number of patients who have had these points neglected in their treatment. The first is the medication of the patient who complains of bladder symptoms. Begin by having a culture made. If the patient comes to operation later and bladder complications arise, it is satisfying to have definite evidence as to the condition of the urine before the operation was performed. It may help to place the responsibility if the patient has been catheterized in the hospital.

And secondly I hesitate almost to mention these points that I have found useful in the treatment of vaginal cysts. Vaginal cysts do not give marked symptoms and if one attempts to excise them in my experience the effort of excision of such growths seems to be beyond the value of results obtained. It is not so simple as it appears before you start. They are sometimes adherent to a remarkable degree and the operation may be of considerable magnitude as far as the bleeding is concerned although you thought it would be a simple procedure at the start.

The suggestion is to simply cut off the top of the cyst, so that the walls of the cyst, and the walls of the vagina are flush then suture the line with interrupted or continued sutures of cat gut, and leave it at that point. The immediate result is a rather shallow diverticulum of the vagina, which will rather quickly disappear or diminish in size as time goes on and you get, very easily perfectly satisfactory results without the difficulty of cutting out a vaginal cyst which sometimes is quite a difficult procedure.

Dr. HENRY T. HUTCHINS Boston Mass. In regard to some of the newer problems in gynecology I believe the general surgeon will welcome such suggestions as Dr Morse has made in his paper.

I would like to emphasize one point which he has clearly brought out. Speaking of the treatment of the bleeding of endometrial hyperplasia Dr Morse notes that since the effect of prolonged administration of extracts is unknown, the bleeding can be most satisfactorily treated by repeated curettage, radium or in extreme cases by hyster-

ectomy I want to emphasize the treatment by repeated curettage

By repeated curettage I mean a thorough curettage performed every four to six months if necessary over a period of several years. Each curettage will stop the bleeding for a certain length of time and the interval between becomes longer and longer. This can be done under nitrous oxide anesthesia with a stay of not over twenty-four hours in the Hospital and a return to the usual occupation in seventytwo hours at the outside. The bleeding stops promptly.

Here then is a method that the general surgeon can use safely, that will cure the bleeding and will cause no damage and but slight inconvenience and the question of the use of radium or of hysterectomy will not have to be considered. I have one such case to record upon whom curettage was performed starting at the age of sixteen at least nine times in the next six years. She then married at the age of twenty two, became pregnant and was delivered of full term twins. Therefore, the endometrium was not destroyed and we were able at all times to keep her blood up within normal limits. Twenty years later I did a hysterectomy for prolapse and found the uterus normal with only a very slight hyperplasia.

Here then is a method which can be used by any surgeon safely and will cure the bleeding caused by endometrial hyperplasia, but the curettage must be repeated at necessary intervals and should remain a very minor operation. I have never seen a case where I thought hysterectomy was indicated for this cause in the young adult.

The use and possible dangers of radium are avoided.

Within the past six months I have had another girl of sixteen who was nearly bled white from continued metrorrhagia for months. Many treatments had been tried including a prolonged course of antutrin S without results. The hemoglobin was below 30 and the red count just above 2,000,000. A thorough curettage was performed with immediate cessation of the bleeding and no recurrence to date. The pelvic examination was negative and the pathological examination showed endometrial hyperplasia.

The general purpose of Dr Morse's paper is to suggest to the general surgeon some procedures which may help out in the treatment of certain pelvic diseases, repeated curettage for the relief of metrorrhagia due to endometrial hyperplasia is one. The general surgeon may not be interested in the development of the various glandular extracts and can leave this to the gynecologist and internist.

DR JAMES R MILLER, Hartford, Conn. At the Hartford Hospital we have done during the last seven and three-quarter years, 159 vaginal hysterectomies, with one death. In my own experience of over sixteen years, I have had sixty one vaginal hysterectomies with one death. That death was in a recurrent interposition operation, in which I didn't wait long enough for infection to clear up.

I think there is no great question which of the two methods should be done in the individual case. The individual man must have his own preference. It is like religion, it depends on how he was brought up, and unless he is skillful in doing vaginal hysterectomy, he ought not to attempt it.

The general surgeon sometimes will not give adequate thought to the pelvic diaphragm. Two years ago I operated on a woman who had been in the hands of a general surgeon for three operations with recurrence of the cystocele each time. At the last operation he fixed the fundus to the abdominal wall. This was the first time I ever used the technique. I opened her abdomen, cut the fundus loose, dropped it back, and then did a vaginal hysterectomy

and repair with complete cure. So, I think one must choose the middle ground and adapt the method to the situation.

DR PHILEMON E TRUESDALE, Fall River, Mass. After doing 220 vaginal hysterectomies, we regard this operation as one of the most useful in gynecology. In the light of results recorded after careful follow up statistics, we feel enthusiastic about the operation for procidentia in spite of the caustic criticism of the last speaker.

Dr Larkin condemned the operation because of one case in which a vesicovaginal fistula followed in the path of the operation. I think that he should have condemned the operator, not the operation. In this procedure the bladder is always brought into plain view and should never be injured if the surgeon recognizes the characteristic structure of the bladder wall.

I learned how to do this operation from watching Dr William Mayo twenty-five years ago. He said repeatedly that vaginal hysterectomy was one of the most satisfactory operations he did in his practice, and I have had ample reason to believe him. But, as Dr Miller said, the surgeon should be thoroughly familiar with the operation and should limit its application. I think that Dr Eastman went somewhat afield in applying the operation for a variety of complaints. We have used it only for procidentia. Including a perineorrhaphy, this operation can be done in from three-quarters of an hour to an hour. Usually there is very little post-operative reaction. The patients rarely need morphine, and recovery is almost invariably smooth and uncomplicated.

In our first fifty cases we had no deaths. In 200 cases reported in the Hospital Bulletin in September, 1930 and January, 1934, our mortality was two per cent. We have not used drainage in the last 170 cases. We have found that patients do better without drainage.

The removal of large tumors by the vaginal route we believe to be hazardous. Though lacking a background of experience in dealing with such cases treated by vaginal hysterectomy as reported by Dr Eastman, I am very much interested in his views and congratulate him on the results of his work.

DR JOHN W KEEFE, Providence, R. I. I am an advocate of vaginal hysterectomy. Some thirty five years ago, while in Paris, I saw a very skillful French surgeon do several operations through the vagina and he said if a fibroid did not go higher than the navel, he would take it out by the vagina.

These men were extremely skillful, not only that one surgeon but many others. I returned with the idea that I would determine if that might be a good method. I don't recall just how many operations I have done by the vagina, but I have been impressed with the value of that operation, as have many of my friends, like Werder and Weiss who were extremely skillful operators, and some other men from Pittsburgh who advocate the vaginal operation.

If you have adhesions of the uterus, you can make an incision posterior to the cervix and free those, get an idea of the tubes and ovaries, and, though the uterus may be quite sizable, you can remove it per vaginam.

The Frenchmen remove it by morcellation, and I have done that a number of times. It is a comparatively easy thing to do, and there is scarcely any shock following that operation. Of course, we know we can do hysterectomies by the abdominal method, but I do feel definitely that there is a place for the vaginal operation.

DR OLIVER N EASTMAN, Burlington, Vt. I am deeply indebted to the men who so graciously discussed this subject and aroused controversy, which

I hoped they would do and I especially appreciated Dr Larkin's constructive criticism.

A few years ago I think I was much of the same opinion as Dr Larkin. I became inspired with the value of this operation by watching Dr Werner in Rudolph's Hospital in Vienna. I saw him operate twelve years ago and then four years ago he was still inclined to do the operation vaginally where it could be so done. I saw him do any number of vaginal hysterectomies in twenty minutes and do them exceedingly well. He told me personally that he had done two thousand hysterectomies and over and preferred the vaginal route where it was feasible.

I think doubtless I went far from my field as Dr Trueadale suggested, but I wish to impress you with one fact, and that is the last thing I mentioned in my summary that if you do a vaginal hysterectomy you will do a complete hysterectomy and many doing it supravaginally are not.

I recall one I did because it contained a bleeding polyp. On examination it showed no evidence of malignancy of the parts removed. Within six months that patient returned with a carcinoma of the cervix.

I see from one to three or four malignant cervices

every year where the patient has had a supravaginal hysterectomy performed previously. There is a field for both operations. I don't think a man should be radical and say he does the majority vaginally or supravaginally. Not at all! I do emphasize the fact that there are certain operations which can be done much better vaginally and these are the ones I wish to stress the point of the advisability of so doing.

Dr ARTHUR H. MORSE, New Haven Conn. Dr Rushmore has asked me to prove, either that women more commonly become pregnant between thirty five and fifty years of age than they do between sixteen and thirty five years of age or that myomata occur more frequently from sixteen to thirty five years than they do from thirty five to fifty years of age. It would of course be absurd to attempt this. I hope that Dr Rushmore will feel complimented when I tell him that I have made a change in the paper respecting this point.

I do not wish to leave the impression that I accept without question the theory with reference to the origin of myomata. I mentioned the theory in the paper because I feel that it is of interest. Where the endocrinics are concerned a conservative position is the safest.

#### DR. NELSON OF MICHIGAN JOINS FEDERAL FOOD AND DRUG GROUP

Dr Erwin E. Nelson of the University of Michigan, has been appointed Principal Pharmacologist in charge of the Drug Division of the Food and Drug Administration according to an announcement by W G Campbell Chief.

Dr Nelson will plan and carry out investigations to determine the pharmacological action of drug and food preparations and of materials of which they are composed. He will furnish for final executive action expert critical advice on policies involving the effects of drugs and foods or their ingredients or adulterants, on the health of consumers. He will act as consulting expert on formulating policies for the enforcement of the Federal Food and Drugs Act.

Dr Nelson has been retained previously by the Food and Drug Administration as an occasional consultant on specific questions and as an expert witness in court cases. He obtained the degrees of A.B., A.M., and Ph.D. from the University of Missouri and a degree of M.D. from the University of Michigan. He also took medical work at Johns Hopkins Medical School. He served as an instructor in various sciences at the Southern Collegiate Institute and at the University of Missouri. Since 1919 he has been an Assistant and Associate Professor of Pharmacology in the Medical Department of the University of Michigan. He is a recognized authority on methods of standardizing drugs by means of biological assay.

#### MORTALITY EXPERIENCE OF THE FIRST NINE MONTHS OF 1934

Health conditions among the millions of men, women and children who are Industrial policyholders

of the Metropolitan Life Insurance Company have been good during the first nine months of 1934. It is true that their deathrate has been somewhat higher than last year. There has been in fact, a rise of 3.8 per cent. It must be borne in mind however that 1933 was a record year for low mortality and the small increase observed in 1934 is obviously no cause for concern. Judged by the mortality record of the general population of 86 large American cities, up to September 30 of the year 1934 health conditions among these millions of insured persons have been better than those in the urban population at large where the increase was 4.6 per cent, as compared with the like part of 1933. These 86 large cities are located in 33 States and comprise more than one-half of the total urban population of continental United States.

Insured wage-earners and their dependents in Canada have registered a lower deathrate this year than ever before and among those living in the Pacific Coast and Mountain States the rise has been inconsequential—only 1.4 per cent. In the rest of the United States however where the great bulk of the Metropolitan Industrial policyholders live, an increase of 4.4 per cent over the corresponding period of last year has been registered as against 3.8 per cent among all of the Company's Industrial policyholders combined.

Among the white policyholders the rise in the deathrate this year has been only 3.1 per cent but the increase among the colored was much greater (7.3 per cent). If the rise in their deathrate this year proves to be much greater than that for colored persons in the rural sections it will perhaps indicate that our city Negroes have suffered more than other population groups from the adverse effects of unemployment. — *Statistical Bulletin* Metropolitan Life Insurance Company

## THE NEW HAMPSHIRE MEDICAL SOCIETY

### WHAT IS WRONG WITH THE PATIENT WHO FEELS TIRED, WEAK AND TOXIC?\*

BY WALTER C ALVAREZ, M.D.†

*Mr. Chairman, Ladies and Gentlemen*

I WOULD like to talk about the beauty of New Hampshire as I rode up here this morning. It is so beautiful that even a confirmed Californian might find his allegiance to his state wobbling a bit.

Some of you are probably wondering what type of case I am going to talk about. I might have chosen another title, which I often use, that is, "The Digestive Troubles of the Relatives of the Insane," because it is this group about whom I am going to speak.

I don't blame you for laughing, because I talked about this topic in Minneapolis the other day, and several of the doctors confessed to me afterward that they had come purely to hear what anyone could say about such a topic. But really, I think it is one of the most important subjects that I could discuss with you, and I think that you will agree that I am right as you begin to see in your minds the type of case that I am going to describe.

I am going to pass by, first, that large group of people that I might talk about who have beginning tuberculosis, or cancer, or heart disease, or some sort of organic disease that has them by the throat and is going to pull them down.

For years, I have been puzzled trying to understand the troubles of a large group of persons whom I see almost every day in the clinic where I work. They come in from the ends of the country, hoping to have themselves made over again perhaps by some sort of surgery. The average doctor will, I think, see that they are neurotic, and he will often be disgusted with them. Often he dismisses them with as little ceremony as possible. They shouldn't be sent away, because these poor people, many of them, suffer the tortures of the damned. As I often say to them, "I would much rather have a broken leg than what you have."

Now the interesting thing is that these people come to the gastroenterologist complaining of indigestion. But later they may say, "Oh Doctor, if you could only fix this miserable feeling in my head." Many who talk first about a pain admit later that it is just a miserable feeling, or that it is a soieness, or a feeling of auto-

intoxication or poisoning. Others say "If you would only cure this constipation, I would be a new man and I could go out and face the world."

But, long ago, in my youth, I came to see that no amount of fixing of constipation would cure these people. Sometimes I have kept the colon perfectly clean with enemas for a week or two, only to show the patient that he was not particularly improved. A more extended study of these patients has shown me that the most trying symptom often is a miserable feeling in the head, a feeling of inability to face the world, a feeling of fatigue, of being tired, and extremely weak and discouraged.

It is unfortunate that the average doctor who sees these patients doesn't ask some three or more questions. I practically never see these questions asked or answered on the histories which are written by the best young men whom we can select twenty-five, thirty or forty of them each year out of some twelve hundred who apply to us, graduates from the best medical colleges in this country.

But what are these questions? They are tremendously important. One of them is "How long is it since you worked?" Here is a man who comes in with a little indigestion, a little gas, or a little pain in his epigastrium, perhaps somebody has told him that he has an ulcer, so he comes to the clinic to be operated on. I say to him, "How long is it since you worked?" His answer, many times, is, "Oh, I haven't worked for four years." Then I say, "Well, you don't mean to say that you haven't worked for four years because of that little gas in the pit of your stomach. I know many people who are walking around with the severe pains of ulcers and they never miss a day from work." Then if I pin the man down, I find that he hasn't worked because he feels so awful when he wakes up in the morning. He feels that he cannot face his job. He can't face people. They annoy and upset him. He can't face crowds. He is uncertain about himself. Many a man has told me, "Well, if I went to work, I probably wouldn't do my job right, and I might get fired." Or, "The boss might say something to me and I would get mad and quit."

That story tips me off to the all-important fact that I am dealing with a man whose main trouble is not in his stomach but in his nervous system.

Often, too, I ask about character changes

\*Read before the meeting of the New Hampshire Medical Society, Manchester May 16 1934.

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They are extremely important. I ask also about sleep, because a patient who cannot sleep can not get well.

There is another most interesting question to ask, and if some of you will remember this and use it in your practice from now on I think, possibly I will have done something worthwhile in coming here to talk to you. For example, I saw a woman the other day who came from a long distance to have an ovarian cyst removed. None of us wanted to touch that ovary. Why? Because I asked the woman "Can you read?" Now, note that she is an intelligent woman who has read all her life. And her answer is "No, it is a funny thing but in the last few months, I just can't read". I asked her "Why can't you read?" "Well," she said. In the first place I have lost my interest in it. I am not interested in anything. Furthermore if I try to read, I get tired immediately. I find myself reading the same lines over and over again. My eyes tire quickly, and it just doesn't mean any thing to me."

Now the minute I got that story it told me a very important thing about that woman which was promptly substantiated by further study and by talking to her husband. That woman had undergone a marked character change. Before, she was interested in her husband, devoted to him, interested in her home, interested in her women's clubs, in her church "crazy" about her children, her mother, and her sister. But now she doesn't care a hang about anything. She is completely demoralized. And to me the most interesting thing about her is that her mother was insane for four or five years around the time of the menopause. She also has an epileptic brother.

You see, then, that we have here deficient germ plasm, something wrong with the heredity of the woman. She is in, or on the edge of, a serious nervous and mental breakdown, and it is quite possible that for a while she may have to be cared for in a sanatorium. If I had that nice looking woman sitting here on the platform, you might talk to her and she would seem to be perfectly normal and intelligent. But if you question members of her family they will tell you about the remarkable change in her.

Note that her husband didn't think to tell me about this. Worse, yet, the physician who referred her did not mention it. He apparently had not noticed it. But if he had operated on that woman, as he proposed to do, there is a good chance that later she would have jumped out of the hospital window or she would have gone to pieces mentally. Every surgeon must be on the watch for the borderline insane or occasionally he will operate on one and will have endless trouble afterward.

A man who is not on the watch for border line insanity will not notice it. The patient will

not say anything about it, the family will not say anything and you who sit in a consultant's office and have never seen the patient before can easily fail to see that the patient has changed tremendously from what he or she was before.

Where I work, I have an unusual opportunity to see how the younger men who are starting out to win their laurels as internists, think and act when faced by this type of case in which the patient is teetering on the edge of a nervous breakdown. To my way of thinking, the modern physician is badly trained in this field. Actually he has almost no training in the handling of nervous and psychopathic patients. Whenever I get a chance to talk to the dean of a medical school, I complain to him that his best students know all about blood chemistry, and the making of a diagnosis with laboratory helps, but when it comes to handling a nervous, worrisome patient, or when it comes to recognizing the fact that the patient seated before him is insane, he falls down badly.

And if it should dawn on one of these physicians that the patient before him is mildly deranged would it ever occur to him that the brain had something wrong with it? No. In my experience he begins thinking of something wrong with the glands of internal secretion, or he wants to remove foci of infection or he thinks there is something wrong with the colon. As I have often said, "Here is the brain. It is one of the organs of the body, perhaps the most delicate of all. Then why can it not have some diseases all its own? Why does it have to take all of its troubles second hand?"

I am sure you will agree with me that a lot of these poor people are being operated on futilely two and three and sometimes many times. Recently, I saw a man who had had eight futile operations on his colon. He was so miserable that I with all my inhibitions, was willing to let him have another try but fortunately I think, Doctor Judd overruled me and refused to go in. The main trouble with this man was probably a hereditary psychopathic make up.

I saw another man last week who had had ten abdominal operations in nine years. Finally his surgeon at home refused to touch him any more. I said to the man, "What is the real trouble with you?" He said "I feel funny in my head and life is too strenuous for me. There is too much responsibility in my job and I can not stand meeting so many people, they upset me and tire me. I wish I could go off by myself into the country and have a little chicken farm." I said to him, "What is your job?" And he replied "I sort mail in the post office." I am ashamed to say that one of our own surgeons performed the first operation ten years ago, but his notes made at that time show that his heart carried him away when his brain warned him to stop.

sultants in my city tell me that that is what I have?" My answer was that he was able in that way to get her out of the office in five minutes and in a satisfied frame of mind I had spent three hours and still had her on my hands dissatisfied.

Some of you may ask, "Well, didn't he have more sense than you did?" In a selfish way, perhaps, yes. But you will note that he did not help her in the slightest, I was struggling to help her, and perhaps more to help the poor husband who for years had been spending every dollar he could make on doctors. I wanted to save her from useless operations and useless examinations, and I wanted to teach her how to live with a colon that would be hypersensitive all her life.

Another favorite method we physicians have of getting patients out of the office quickly is to tell them they have enteroptosis or a dropped colon. It is nice for the physician, perhaps, but later that patient may use up all her savings in traveling a long distance to some prominent surgeon, hoping to have the condition fixed and thereby to become well and strong.

Other women are told that they have a retroverted uterus, but what of that? If the girl is thin and relaxed, one must expect to find a retroverted uterus, and if she is unhappy in her marriage or fighting with her mother-in-law, or contemplating a divorce, what is the use of operating and bringing that uterus forward?

Many physicians seem to think that, if a surgeon goes into the abdomen, the patient has everything to gain and nothing to lose. Something may be found that needs correcting and if it isn't at least no harm is done. Actually, I could show you many cases in which great mental harm is done if only because there is implanted in the patient's mind the idea that she has adhesions. Then she wants another operation to loosen these. One of the big things that we physicians must do with these neurotic people is not to implant new fears in them. Actually many of the fears that they have are implanted by our unwise statements and our futile attempts to help them.

At times, we physicians do not even recognize frank insanity when we see it. I know that several times I have not recognized it until the patient had been around the office for several days. It is a dangerous thing to operate on these people. Often, it is very difficult to get rid of them afterward. I know a few surgeons who have been shot by them.

Six months ago, I saw a psychopathic woman who came hoping to have an abdominal operation that would make her over. When this was denied her, she managed to talk one of the surgeons into fixing some ingrowing toenails. Oh, how he has regretted it! She has had one complication after another, and all of her neurotic

make-up is now expressed through those toes. She writes my poor colleague a long letter every two weeks, asking him what is to be done.

A few years ago, I saw the wife of a professor in one of our universities. She came complaining of indigestion. On account of her husband's position, she naturally was seen by prominent physicians associated with the university. They gave her a thorough going over and, unfortunately, found a few amebic cysts in the stools. They went after them with old-fashioned methods, putting her in the hospital and purging her drastically. She was able to walk into the hospital, but she came out in a wheel-chair.

The stools were examined again, and when another cyst was found, the physicians wanted to put her back in the hospital and give her another course of treatment. The husband had more sense. He knew what one course had done and he did not want two!

When I saw her, I got my hunch immediately because a big healthy-looking woman who could walk as well as I could came in a wheel-chair. I next noticed that she was depressed and slowed up, and that she cried easily. I then drew from her the fact that a few months before, she had been an active, wide-awake woman who had loved her home, her husband and her family, and had been interested in clubs, church, and several intellectual pursuits. When her illness began, she lost all interest in everything. She did not care where her husband was. She did not care about her house. She did not want to see her friends. She lost all ability to read and just sat around the house in a depressed state. Well, now you know, as well as I, what was the matter with her. She had a fully developed melancholia. What I wonder is, if I, who never saw the woman before, could make this diagnosis, why should not her home physicians, who probably knew her socially and must have seen the marked character change develop, have made it? Why could they not have recognized what was happening? Because they had their eyes glued to laboratory reports.

I refused to waste this woman's time and money by putting her through the diagnostic mill. I sent her home where a sister and a wise, friendly, old family doctor could take good care of her, and two years later when I saw her husband, he told me joyfully that she was herself again. Incidentally, this woman's father had been insane for many years.

But if we physicians who do not specialize in insanity miss the diagnosis occasionally, we can take comfort in what one of my friends, a psychiatrist, tells me. He tells the story of a fellow psychiatrist, to whom there came a man with a request for a most thorough examination. His story was that men were following him, and when he went to the chief of police to get protection, he was laughed at. He wanted the

psychiatrist to examine him and then certify him as perfectly sane. The doctor thought that he might as well go ahead with it, so he began the examination. A week later he called the man into his office and said "Sir, I have an abject apology to make to you. When you first came, my impression was that the chief of police was probably right, but my secretary has called my attention to the fact that every time you come here a man follows you and stands behind that tree in the park until you go out again and then he follows you off." "Oh, no," said the man, "don't pay any attention to him. He is the detective I hire to keep the other fel lows farther back."

I could go on telling you a lot of curious experiences with the crazy people who come to consult a gastroenterologist. I remember a beautiful woman who came in one day and after a while my assistant, who had been trying to get her history, came and said, "Doctor, I wish you would talk to this woman. I don't know what to make of her. There is something uncanny about her." I went in and asked her what the trouble was. She said, "I have a tapeworm." I asked her, "How do you know you have a tapeworm?" "Why," she said, "I can feel it biting, I can feel its teeth coming together." We chatted a while and she told me a number of other interesting things. For instance she said she was sorry but I probably would not get paid for the examination right away because she was the morganatic wife of the Prince of Wales. He was in South America and had forgotten to send her her allowance. Finally, I excused myself and said I was sorry but I did not know anything about tapeworms. I knew it would be a waste of time to try to help her.

As I said before it is easy for the city consultant to miss a big character change which often is the most important thing wrong with a patient and the thing that he says nothing about. Last year, a physician came to Rochester with a patient who obviously was a nervous wreck, unable to do even the slightest chore around the house. If he did attempt this, he broke out into a sweat, his heart raced and he had to go to bed. He came not to get relief, he had given up hope of that, but the insurance company had canceled his disability stipend and had accused him of being a malingerer. The story was that the man had been perfectly strong and well until he almost died with a severe infection with actinomycosis on one side of his face. I said to the physician, "Did it ever occur to you that this man mentally and in almost every other way is different from what he was before that infection came?" All of a sudden the light seemed to dawn on the doctor, and he said, "That's right. I don't think I ever thought of it before, but this man used to be one of our most active and prominent citizens. He

was head of the Board of Trade, he ran the Community Chest, he was a prominent Rotarian and he ran the best hotel in town. Now he is a bum, down and out." What interested me was that when I looked over the reports that had been made by several physicians to the insurance company, there was much mention of slight changes in the hemoglobin and the teeth and the tonsils and the heart beat, but nowhere was the slightest intimation of the all important fact that the man was a changeling.

It seems to me that if we can so easily fail to note these marked forms of mental breakdown we must be missing every day the milder forms.

Now why do many of these people break down? Why do they feel so tired and upset? The more I study them, the more I am impressed with one fact, and that is that many of them have insane relatives. In other cases, I am practically certain that if I could only learn more about the family, I could find where the patient's disability came from. Unfortunately in this country, there are many people who know nothing about their grandparents and their uncles and aunts. Sometimes they don't know much about the parent who was divorced or who died years before.

You all know, also, that we don't have to find actual insanity in these families. There are many people with equivalents of insanity. For instance there is the crank and the man who drinks hard in sprees and there is the hobo and the religious fanatic, and the ne'er-do-well, the mystic, the criminal, the violent reformer and the blatant politician.

Some of these nervous patients who give us so much trouble are physical weaklings, and some are mental weaklings, but others are splendidly built and some are mentally brilliant and very able. Some of them have never been able to do a day's work. Some have been frail all their lives. Some have severe headaches, eye strain, and indigestion and the women often have terrible menstrual storms. I don't like to call these people constitutionally inferior, but I call them constitutional inadequates because I think this expresses the situation better. They are inadequate to stand up to the strain of life.

These people constitute one of the menaces to civilization. In generations past they fell by the wayside and died because there was nobody to look after them. To-day by the millions, they are coming under government care, modern sanitation is keeping them alive. They all have votes and in the future they will see to it that those of us who can make a living shall give an even larger share of our earnings to those who cannot. Eventually we will have to find out how many people can be on doles of some kind without ruining the finances of a country. It is a terrible problem that our children must work out.

Perhaps more than half of the patients whom

I see fall into this type. They constitute a tremendous financial problem for the physician because most of them have very little money, some of them have no money at all, and never did have any, they cannot fall back on their relatives because they also are constitutionally inadequate, and have very little money. They take up a tremendous amount of time which many cannot pay for, but still we must try to help them because they suffer so much, and many of them are lovable characters. I have spent countless hours with them trying to show them how to live more comfortably with their handicaps. We can't make them over. As I often say, there is no operation that will change a Pomeranian into a bulldog.

These people go to pieces under any excitement and they suffer particularly with any break in the day's routine. I have yet to find a good description of them and their problems in the medical literature. I got most help from reading the life of Charles Darwin. There I found the story of a typical constitutionally inadequate man with a wonderful brain but a nervous system that could not stand the strain of life. The least excitement would start him to vomiting. He would lose a night's sleep and he might be entirely useless for several days afterward. Whenever he asked friends to his house, he always asked two or three at a time so that if he went to pieces and had to retire, the friends could amuse each other. If he had to address a scientific audience, he would vomit for a week or so afterward.

Darwin's organs must have been pretty sound because he lived until he was seventy-three. He then died after a few days of angina pectoris. You may ask, then, why was Darwin so frail? There was nothing in his early life to break him down. He was well off financially, he had no worries of any kind, he was happily married. I have read everything I could find on the Darwin family and, just as I expected, I discovered that one of his uncles committed suicide while in a state of depression, another uncle suffered terribly with what seems to have been a combination of melancholia and mucous colitis. Several of Darwin's children inherited his tendency to a weak nervous constitution. Some died young, being apparently too frail to live.

Hence it is that more and more often now I ask the constitutionally inadequate person of a certain type about his family. I don't ask about insanity because that would frighten him, but I ask if any one ever had a bad nervous breakdown. I ask also if any relative drank to excess or had fits, or was a curious crank. Often the patients will lie in order to conceal such a family history.

A few weeks ago I tried hard to dig a story of insanity out of a woman who obviously was

in a nervous breakdown of the type that we see in the relatives of the insane. She maintained, until the last day, that all of her relatives were perfectly normal when on walking out of the door, she said, "I guess you are right, Doctor, I will know how to fight this thing now. Mother was depressed this way and had to be in a sanatorium for five years after the menopause."

One of the most essential things with these people is to recognize the fact that even when you find gallstones or big tonsils or a fibromyoma of the uterus, these lesions cannot possibly explain the bad mental situation.

I feel that we physicians must avoid operations on these people for several reasons first, because an operation will probably not do the patient any good, and secondly, because it may do great harm. A useless operation can bring the surgeon no credit, and it also gives modern medicine a black eye. Often, as I have already pointed out to you, the surgeon who operates on a patient unwisely is so annoyed and hounded by the complaints of the invalid that he comes to curse the day when he was so foolish as to operate.

Often, also, it is our duty to conserve the financial resources of these poor people. A psychopathic woman can keep her husband in debt for surgeons' and hospital bills for years, or for all of his life, especially when the poor husband is a sympathetic, kindly man. I hate to be party to any further depredations on his pocketbook. Often I spend hours on his wife's problem, not so much with the hope of helping her but with the hope of helping him. Often she has no sense, but he has.

Sometimes we can save ourselves time which otherwise would be wasted. For instance, last Friday night as I was leaving the clinic to come here to talk to you, I saw a nice-looking young woman about thirty years of age who looked perfectly well. She came rather expecting to have an operation done on her pelvic organs because this had been recommended by a surgeon in her home town. Her wise old family doctor had objected, and had sent her for a third opinion. A few years before, a number of nervous symptoms had appeared, feelings of fatigue and abdominal discomfort. The appendix had been removed and when this did no good, the gallbladder had been removed. If anything, she had been worse, and the next suggestion had been that she have the uterus operated on. This is the story that I dug for and got. The troubles began when the husband died. She was left "sort of lost" so that it had been almost impossible for her to pick up the threads of life again and carry on. Then she became happier over an engagement to a nice man, but a day or two before their wedding day, he was killed in an automobile accident. With that, she went to pieces, she shut

herself up in her apartment and began to drink from a pint to a quart of whiskey daily. She feels there is nothing left in life, and what is the use of trying to do anything about it? The sooner she drinks herself to death the better for all concerned. I asked her about her family and I was not encouraged about the situation when I found that her father has been insane for the last ten years. There is not much heredity there to build on.

Now what is the use of putting such a woman through a complete medical overhauling when she tells a story like that. As it turned out, she could not afford to pay anything for my consultation, and if I had kept her around the place for a week, the clinic would have been out another sixty dollars or more. What could one possibly do to such a woman in the way of operating that would do her anything but harm? All I could do for her was to advise her to go to the home of one of her sisters who is a sensible, kindly woman and who may be able to stop the drinking, and may be able to lead this girl to a new interest in life.

I could go on for hours telling you about these patients and showing you that even the more able members of our profession fail often to recognize the situation that presents. Why? Because they will not take the time to get the history of a broken life. They say "Go get a blood count and a set of x ray films."

A while ago, I was in a big city and was asked to give a clinic. I said, "All right, bring me a gastro-intestinal problem." So one of the clinicians brought in one of his patients. I looked at the record and found that this man of forty three had suffered with a certain amount of hunger pain. Some of the physicians in town had advised operation for duodenal ulcer, but others had advised removal of the appendix. Many x ray and laboratory examinations had been negative. Fortunately the man had refused the operations that had been offered him. I sat down and had a long chat with him. He told me I was the first physician who had spent that much time with him or who had ever listened to his story. The important thing in his story was that he had not worked for four years because he was afraid of falling down on the job and losing his union card. For eight years, he had worried without cause. His wife finally had to leave him. At times he was extremely depressed, and the only reason he had put off suicide was that he had to bring up a little motherless girl. He felt often that he would lose his mind and he liked best to sit all day in a darkened room with his head in his hands. Further questioning showed that his mother had been insane for years, his sisters were all psychopathic, his brothers were drunkards or criminals and one had died insane. Apparently he was the flower of his family.

Here is a beautiful girl who comes from a

year in a tuberculosis sanatorium. It is questionable whether she ever had the disease because the films do not show any scars. She was brought to me because she had a diarrhea which was supposed possibly to be of tuberculous origin. As usual, her physicians, highly intelligent though they were, had depended largely on laboratory and x ray findings in making the diagnosis. I don't depend on these things. As you may have noted, I like to sit down and become acquainted with my patient. I want to know something about her life and I want to know all of the details about how her disease began and what seems to keep it up. So I said to her, "What do you mean by diarrhea? Do you have loose movements?" "No," she said, "I would not say that. I just get spells when I go to the toilet repeatedly because it seems to me that I want to have a bowel movement, but often it is just gas and a little mucus. For instance, on the way to see you I had to stop four times at the toilet simply because I was excited and nervous about the interview." Then came out the fact that all of her life her digestive tract had been oversensitive to emotional or disconcerting events. When her husband was courting her, she had a difficult time because she would get to the head of the stairs on her way out for an evening, and would have to rush back once or twice to the toilet. I found also that this woman had been through a very difficult time. Her father, a charming highly educated man, has been drinking himself to death, and this has upset her. She and her first husband did not get along well and the divorce and arrangements about the children were very trying and upsetting to her. Her year's illness and slight fever was probably a nervous breakdown following this divorce. It is interesting also that this woman's mother, who was an able musician, drank herself to death.

Here comes a charming man who has written several interesting books. He is fifty four years of age and he has had poor health all of his life. He is frail, thin and dyspeptic, and has never been strong. He has terrible migraine at times. A physician found gallstones which were removed, without effecting any improvement. The stones apparently were silent and of no significance. He is sensitive to many foods and I was able to help him a little by finding out for him which foods he should not take. The important thing is that if he works steadily for a while he becomes depressed and weak. His abdominal discomfort becomes unbearable. He has to stay in bed for a while and, for a month or more, he cannot do a stroke of work. His bowels become loose when he is trying to write. Laboratory examinations show nothing significant. The essential point is that his father and mother were highly nervous and one was an epileptic. Another relative had severe migraine. His father's sister was "not all there".

His great grandfather drank himself to death

As Oliver Wendell Holmes would say, the only way to help such a man would be to select a different set of ancestors for him

Now the hardest job that we have to do often is to convince these people that their troubles are due to their congenital frailness and their highly sensitive nerves. It is an art which I have spent twenty years trying to learn. As you all know, it is very easy to "get in wrong" when one starts trying to tell these people that their troubles are purely functional. They represent the term nervousness and they feel in some way that such a diagnosis means that they are silly, and hysterical, and without good morals or judgment. Often, I have to explain to them that I myself, who am not obviously excitable, still feel that I am highly nervous because my internal organs are so very sensitive to fatigue or to emotional influences.

Often, one of my younger colleagues will come to me and ask me to see if I cannot calm down some man or woman who is highly dissatisfied with the diagnosis made, deeply resentful, and very hard to deal with. I seldom have much difficulty with the people because I first try to convince them of my sympathy for them and of my understanding of the problem. I always try to make them see that I do not question for a moment the reality or the seriousness or the annoying nature of their symptoms. I tell them I would rather have a broken leg than go through what they are experiencing. Then I go on to study their life problem, and often the discussion of trials and unhappiness and strain and disappointment brings me and the patient closer together in sympathy and understanding. Then we talk over that problem and try to see if there is any way out. Sometimes, as in chess, there is no place where the knight can move where he won't get taken.

For instance, here is a highly intelligent neu-

rotic Jewess with a so-called colitis. Some physicians have diagnosed duodenal ulcer which perhaps she has, but her real trouble is her great dissatisfaction with her marriage. It has brought her nothing but unhappiness, and she is anxious to separate from her husband. But what can she do? His business went on the rocks and he is working for a small salary. If they separate, there can be no alimony. They have a girl whom both love and she holds them together. The wife cannot return to her family because they have lost their money and besides "to live with her mother would drive her to drink." As long as she keeps threshing over the problem of a divorce it is useless to bother with doctors. Since there is no conceivable way out of the situation, she agrees with me that the only thing to do is to go back to her husband and try to live with him.

I admit frankly that often we cannot do a great deal for these people. Sometimes, a patient has said, "Why should I pay you when you did not cure me?" On looking over the record, I do feel for a moment much as she does, and then I note that she came because somebody else wanted to remove a normally functioning gallbladder which has never produced colic and which certainly is not producing the symptoms complained of. Then I say, "Yes, I have done something for you for which you can never repay me. I have saved you from a needless operation and perhaps from a series of needless operations."

Sometimes I feel that I have wasted much time with these people, but then again, when I think of the hundreds whom I have been able to help, those whom I have taught how to live comfortably with their handicaps and within their means of strength, I feel that this work has been worth while. I beg of you that more of you spend time generously in trying to help these poor people. They deserve better of us than we now often give them.

#### "VITAMIN C" GINGER ALE

Attempts to capitalize upon the public's scanty knowledge concerning the rôle of vitamins in nutrition and disease continue to be in evidence. Recently the Blue Seal Extract Company, Boston, has circularized New Hampshire bottlers with a proposal to supply a special vitamin C-containing extract for the manufacture of ginger ale. Such is not the first appearance of this sales scheme, and apparently it dies hard.

According to the Blue Seal circular, 'Vitamin C is one of the most essential things to life. If taken in the form of food or beverages, it supplies us with energy, gives us resistance to sickness and disease, and has a general up-lifting effect on the human system. We have so carefully blended it into the extract that it produces a delicious refreshing pale dry ginger ale that will give zest and pick up to the beverage in a most refreshing way, and you will be surprised at the smoothness it imparts to the beverage for all purposes.'

The foregoing is a fanciful statement. Either the Blue Seal Company is drawing upon its imagination or it has itself been imposed upon. On writing this concern for information we were informed that it was using a vitamin C preparation which it was purchasing from the Hibbard Laboratories, Cleveland, Ohio. A letter addressed by us in turn to the latter was returned by the Post Office department stamped "unknown".

The gist of the matter is that whether or not this vitamin actually is being added to the product in question, it could not act in the manner claimed by the promoters, and we have so advised our bottlers with the further advice that until such time as the distributors of preparations of this kind containing really substantial quantities of vitamin C are content to rest their claims upon antiscorbutic value—as characterizing the dietetic value inherent in oranges, lemons and tomatoes—they should be given no consideration—C. D. H.—*Bulletin, New Hampshire State Board of Health*

## NEW HAMPSHIRE SURGICAL CLUB

### MESENTERIC THROMBOSIS\*

BY W. J. PAUL DYE, M.D. †

OCCASIONALLY a case of mesenteric thrombosis is encountered. Results of treatment of this disease have shown a very discouragingly high mortality rate in the past. Because the condition is generally an acute surgical emergency, the lack of success in its treatment appears to be a challenge to all abdominal surgeons. Surgery has been tremendously progressive in its advance and in the excellent technical perfection and clinical results that have been obtained in many heretofore grave conditions. It is to be hoped that thought and consideration may be stimulated regarding the treatment of mesenteric thrombosis so that the mortality rate of this serious affliction may perchance be lowered.

The first recognized case was reported by Tiedemann in 1843 and Virchow<sup>1</sup> gave a detailed pathologic report of thrombosis of the superior mesenteric artery resulting in infarction of the jejunum in 1847. Kussmaul and Gerhardt<sup>2</sup> in 1863 emphasized the clinical aspects for the first time in medical history. In 1913 Trotter<sup>3</sup> analyzed 360 cases from the literature, including six of his own, and found that a preoperative diagnosis had been correctly made in but thirteen cases. To date about 500 cases have been reported since Virchow's original description in 1847 out of which thirty five have survived whether operated on or not, showing an appallingly high mortality of 93 per cent.

The superior mesenteric artery has been found to be involved about five times as often as the vein, and the superior artery approximately forty times more frequently than the inferior. However, the amount of intestine that is supplied by the superior is greater, being from the duodenum to the anastomosis with the inferior at the middle colic.

#### PATHOLOGY

As a general rule, the obliteration of an artery at any place in the body produces an anemic infarct of the area of tissue supplied by it, while the obliteration of a vein gives a hemorrhagic infarct. This type of reaction does not hold true in the case of mesenteric thrombosis. Regardless of the cause of the thrombosis or whether the artery or vein is involved, a hemorrhagic infarct always occurs. The infarction is followed by peritonitis and the mucous mem-

brane of the bowel ulcerates and breaks down with hemorrhage into the canal. The mesentery becomes markedly swollen and edematous, and the intestine may perforate and cause peritonitis from macroscopic lesions. Extensive gangrene may develop within forty eight hours, and there may or may not be a distinct line of demarcation of the gangrene.

Various observations have been made in connection with experimental work:

1. The lodgment of an embolus in a mesenteric artery or vein may or may not produce an infarct; at times a collateral circulation has been found to have become established before any real infarction has developed.

2. Slow closure of the lumen of a blood vessel by a thrombus may stimulate the formation of collateral circulation. Welch and Mall ligated the collateral circulation of the small intestine at the pancreatico-duodenal and middle colic arteries in an experimental animal. No infarction happened as the superior mesenteric artery was still intact. However, they found that when the artery was compressed to one-fifth of its normal caliber, infarction began to occur. They gathered from this that in certain cases not developing a collateral circulation, such was due to the lack of blood passing through the part, from cardiac insufficiency with or without venous stasis.

Three brief case reports show the method of operation in different types of pathology:

1. Karcher's<sup>4</sup> case. Primarily a case of endocarditis, valvular heart lesions and cardiac decompensation. The patient incidentally had a severe attack of abdominal pain with bloody diarrhea, all of which subsequently subsided. After a typical cardiac death the postmortem showed obliteration of the superior mesenteric artery, with multiple infarcts throughout the liver, spleen and kidneys. There apparently had been an early infarction of the small bowel which subsided because of the establishment of collateral circulation. Here the mesenteric thrombosis was overshadowed by other overwhelming pathology, although caused by such, and did not in itself cause death.

2. Councilman's<sup>5</sup> case. The patient had symptoms of abdominal pain with obstipation and fecal vomiting suggesting intestinal obstruction. Postmortem showed an atheroma of the superior mesenteric artery with incomplete blocking of the lumen of the vessel but there was no obvious infarction or other change in the tissues of the small bowel. This would

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serve to show that more blood is required to maintain peristaltic function than is necessary to support tissue life. The mechanism for mesenteric thrombosis was present but there was no infarction of the bowel and death was due to intestinal obstruction from paralytic ileus. This is the intermediate type with intestinal obstruction as the overshadowing symptom and no marked pathology of the involved tissue.

3 Reich's<sup>6</sup> case. The patient was operated on for intestinal obstruction but no pathological change was found and the persistent symptoms were not relieved by colostomy or ileostomy. Subsequent postmortem revealed arteriosclerosis of the aorta, partial thrombosis of the superior mesenteric artery and infarction of 80 cm of jejunum. At the time of the original laparotomy the thrombosis was present and had caused ileus but no pathological change of the bowel was found, subsequently came infarction because of inability to form collateral circulation.

The etiology may be listed as follows:

#### I Arterial Occlusion

- 1 Embolus followed by thrombosis, or embolus or thrombosis alone
  - a From vegetations of heart valves
  - b From atheromatous plaques
  - c Breaking up of thrombi in the auricles or ventricles of the heart

#### II Vein Generally from injury or infarction or both

- 1 Crushing or ligating appendicular veins at operation
- 2 Pelvic surgery in the presence of adhesions
- 3 Splenectomy
- 4 Volvulus
- 5 Intussusception
- 6 Strangulated hernia
- 7 Extension from splenic or portal veins

The primarily arterial and venous types differ clinically, the arterial being marked by sudden, severe symptoms of abdominal pain, the venous being slow in onset with gradually progressing symptoms.

#### CONCERNING DIAGNOSIS

The history may be of help in some instances. An etiology of heart disease, arteriosclerosis, previous operations or conditions as cited above may give a definite clue.

The symptoms generally consist of a constant type of pain which at first is wave-like and paroxysmal, localized to some part of or generalized to the whole of the abdomen, which gradually becomes the persistent pain of peritonitis. Vomiting is frequently present, first reflex, then obstructive, then due to the paralytic ileus of peritonitis. At the start, the vom-

itus contains stomach contents, later definite hematemesis is observed in the cases where there is definite infarction of the small bowel. Constipation or obstipation is present when there is severe destruction of the mucosa or in paresis of the bowel with or without tissue destruction. Melena is seen in the more severe cases, being reported present in forty-one per cent of known cases.

Examination shows that the temperature may at first be subnormal, rising later if there is a peritoneal transudate, exudate or peritonitis. The abdomen is generally diffusely tender, sometimes accentuated in some one area. A mass may be palpated due to edema of the mesentery. Gradual abdominal distention, sometimes with shifting dullness in the flanks due to fluid usually ensues. Auscultation of the abdomen shows gradually decreasing peristalsis due to paresis of the bowel and the onset of peritonitis. There is usually a leucocytosis of 20,000 with eighty-five per cent polymorphonuclear leucocytes or more.

According to Gerhardt, who first described the clinical symptomatology of mesenteric thrombosis in the literature, a typical case should present the following. Definite etiological cause for an embolus or thrombosis, intestinal hemorrhage, paroxysmal abdominal pains, fluid in the abdomen, subnormal temperature, the palpation of a mass, and the finding of blood in the vomitus and stools.

The differential diagnosis concerns itself largely in discriminating between mesenteric thrombosis and the following. Ruptured appendicitis, volvulus in older people, and intussusception. In perforated appendicitis, the temperature is usually higher at the start, the vomitus contains no blood and there is no melena, and shock is a less constant symptom. Volvulus in older people shows no antecedent cause for an embolus and there is no hematemesis or melena. Intussusception in children yields usually a palpable tumor that has a typical "head", there may be melena but not hematemesis.

It is seen, therefore, that without a definite etiological factor or the presence of blood in the vomitus and stools, the diagnosis of mesenteric thrombosis, per se, is extremely difficult, clinical experience alone may be the saving grace in doubtful cases.

The prognosis in cases of mesenteric thrombosis quite naturally depends on the extent of the thrombosis, early recognition and treatment. The course of the disease is usually rapidly downhill with a rising temperature, collapse and peritonitis. Sixty per cent die the first week. The literature, in general, gives a mortality of ninety-three per cent.

The majority of prominent surgeons during discussions state that in their personal experience the disease is practically one hundred per

cent fatal. The operative procedure almost invariably used has been wide and immediate resection of the affected bowel with or without intestinal anastomosis at the same time. Patients, as a rule, have either died on the operating table or within the first twenty four hours following surgery. In the literature the cases reported as recoveries have been those that have been operated on very early in the course of the disease. However, mesenteric thrombosis is usually not diagnosed early and when the patients come to operation their general condition does not always safely warrant the shock of a resection with or without immediate anastomosis.

Two case histories may serve to indicate the advisability of other types of operation or, in the future, suggest better procedures.

Mr E. T., aged forty five, a bank executive, was first admitted to the Huggins Hospital, Wolfeboro, N.H., on April 10, 1933 at 8:00 P.M. For the previous twelve hours he had had a severe dull aching pain in the abdomen below the umbilicus, gradually becoming more localized to the right lower quadrant. This was sudden in onset and became progressively more severe in persistence and intensity. Six hours after onset he vomited and was continually nauseated and vomited several more times between then and the time of admission to the hospital. The vomitus did not contain any gross or microscopic blood and the guaiac test for blood was negative on all occasions. S.S. enemas given at 4:00 P.M. and again at 8:00 P.M. gave fair gas and fecal results but no obvious blood. There had never previously been any similar attacks. The patient's general health had always been excellent. W.B.C. at 6:00 P.M. was 17,000; one hour later it had risen to 21,000 with 88 per cent polymorphonuclear leucocytes on differential count.

Physical examination showed a temperature of 100°, pulse 110 somewhat thready in character, definite muscular spasm of the whole of the lower abdomen, with tenderness throughout, but definitely most pronounced on palpation over McBurney's point. The heart and lungs were normal and the blood pressure was 115/70.

A diagnosis of probable fulminating appendicitis was made and an immediate laparotomy done. The only pathological change found was a gangrenous loop of ileum about six inches long with corresponding thrombotic vessels embedded in a markedly edematous mesentery lying directly over the cecum. From the start of the operation the patient's pulse averaged around 120 and became even more thready at the time the gangrenous loop of bowel was delivered through the incision. It seemed indicated to do some less shocking procedure than a resection. Accordingly a side-to-side short-circuiting anastomosis using good bowel well beyond the gangrenous portion was done and the affected loop with its mesentery was exteriorized by suturing the periosteum fascia and skin below around and under it. An immediate postoperative cystos of 2,000 cc. of 2½ per cent glucose in normal saline solution was given with orders of nothing by mouth and morphine gr. 1/6 s.c. q. 3h p.r.n. given freely. The postoperative condition was good the pulse had quieted down to 100 and was of better quality.

Next day there was little abdominal distention, the temperature was 100.2, pulse 110 and W.B.C. 13,000; no nausea or vomiting and peristalsis was audible throughout the abdomen with the stethoscope. The patient did well until the fourth morn-

ing postoperatively when abdominal distention was noted the temperature rose from 99 to 106° in twelve hours time vomiting of fecal material occurred and he soon expired. The lower end of the incisional wound was opened and more gangrenous bowel was found below the level of the peritoneum.

It was encouraging that this patient lived four days, presumably the same result would have occurred had a resection been feasible at the time of the original operation that is, gangrenous involvement of other bowel that had appeared normal to inspection and palpation at the time. Perhaps this type of operation may again be useful and result successfully in a late case that is a poor surgical risk, at least it seems to be one of the least shocking of any operative procedure in present use for the malady.

Green and Allen<sup>7</sup> of Independence, Missouri recently reported a case of mesenteric thrombosis with recovery. The patient was a graduate nurse aged twenty four years, who had a sudden violent attack of abdominal pain one year after a routine appendectomy. The abdominal symptoms became more severe under symptomatic treatment for three days. Transfusion followed by laparotomy was done as a last expedient although the patient's general condition was poor. Mesenteric thrombosis with gangrenous ileum to the left of the spinal column was found. The bloody purulent material was cleared away, and the affected bowel and mesentery isolated with gauze packs. Payr clamps were then applied proximally and distally with wide margins of healthy tissue and the involved portion of bowel and mesentery resected with cautery and mesenteric vessels ligated. Payr clamps holding severed bowel edges were placed on the abdomen in favorable positions. The wound was left wide open; gauze packs were placed 1 cm. under the edges of the parietal peritoneum all around the wound and the center filled snugly with gauze. This packing was washed out thoroughly every day with a 1 per cent Dakin's solution for three days, then removed and replenished with fresh gauze under gas-oxygen anesthesia. The Payr clamp was removed from the proximal bowel in thirty-six hours, the distal clamp was left indefinitely, and when removed rubber tubes were placed joining the upper and lower bowel segments. The patient was treated thus for five weeks when a uniformly granulating surface presented. Then a lateral anastomosis was done and the peritoneal cavity and as much of the granulating abdominal wall as possible were closed. A fairly rapid recovery ensued.

In this instance a multiple stage operation with adequate peritoneal drainage proved quite effective in a late case.

In all cases of mesenteric thrombosis having surgical intervention, the postoperative care should also be emphasized. Important points concerning such, include blood transfusions,

maintaining normal levels of chlorides, dextrose and adequate water balance with clyses or infusions

#### SUMMARY

1 Mesenteric thrombosis is a serious and usually fatal disease, the literature listing an approximate mortality of 93 per cent

2 A source of etiology such as some form of heart disease favoring the formation of emboli, arteriosclerosis, or previous surgical injury to large intra-abdominal veins may sometimes be noted clinically

3 The diagnosis is exceedingly difficult. Severe abdominal pain followed by hematemesis and melena, the palpation of a mass, and a leukocytosis of 20,000 with 85 per cent polys or more are the main points to be observed. Without the presence of blood in the vomitus and stools, intestinal obstruction, gangrenous appendicitis, volvulus, or intussusception may be reasonably suspected.

4 The prognosis depends upon the amount of functional disturbance, tissue destruction and upon the early diagnosis and treatment. Surgical intervention seems to offer the best possibility of success.

5 Cases that are operated early and in which the general condition of the patient is good call for an immediate resection of the affected bowel and mesentery followed by an intestinal anastomosis.

6 Inasmuch as the diagnosis is difficult, the course of the disease is rapidly progressive and

surgical intervention is accordingly undertaken late when the patient's general condition is poor, some form of multiple stage operation seems to be the safest and most effective procedure.

7 Emphasis regarding postoperative treatment should also be placed upon the use of blood transfusions, hypodermics of morphine given freely, nothing taken by mouth until intestinal peristalsis is reestablished and the maintenance of adequate levels of dextrose, chlorides and water balance by the aid of clyses and infusions.

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## THE PREVENTION OR POSTPONEMENT OF DEATH FROM HEART FAILURE\*

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THE hope of preventing disease is one of the earliest of medical aspirations. Nevertheless, it was only a hundred years ago (and only thirty years before the birth of Dr. Cutter) that Laennec defined the objectives of our profession without mentioning the idea of prevention. "The aim of medicine," said this eminent physician, "is the cure of disease."

The century that has elapsed since this pronouncement has seen a large advance in the understanding of disease processes. This advance has led to an increase in our ability to control disease and to achievements in its actual prevention that capture the imagination. These achievements have been followed, naturally enough, by a change in the practice of medicine and by a change in the point of view of the

physician. In 1934 Sir George Newman can say "The ideal of medicine is the prevention of disease, and the necessity for curative treatment is a tacit admission of its failure."

To point out thus the differences in these two concepts of the function of medicine may suggest that there is some incompatibility between these two objectives, prevention and cure. Nothing, of course, could be farther from the truth. Preventive activities and curative activities are directed at common enemies—disability and premature death.

Among the causes of death heart disease stands first, it ranks high as a cause of disability. It is sometimes said that it is not possible, in the present state of knowledge, to make an effective attack on this greatest cause of death. In this lecture it is proposed to attempt a formulation of the general problem of heart disease and to consider the possibility of useful preventive activity in connection with it.

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## CHANGING VIEWS OF HEART DISEASE

Modern concepts of heart disease may be said to have begun with the investigations of the great morbid anatomists, the clinicopathologic school of the late eighteenth and early nineteenth centuries. These workers naturally thought of heart disease in terms of valvular deformities, of hypertrophy of pericardial fibrosis, of inflammation, and of aneurysms. Physical signs were found, and means of physical exploration were devised, which made possible the recognition of many of those structural changes during life. However, such an anatomical concept of heart disease offered little basis for hopeful treatment and the physicians' wish to heal as well as to classify.

A fruitful field for therapy was found in the concept of *functional diagnosis*. Physiology was advancing, and wise clinicians like James Hope<sup>6</sup> were thinking about changes in the function of the heart which come about as a result of its injury by disease. The idea arose that functional changes might precede gross and irreparable anatomic changes, and that alterations in function which produce discomfort or danger might be favorably influenced by treatment. This concept of "functional diagnosis" has been of particular importance in the latest period of the study of heart disease. A considerable proportion of our therapeutic efforts in connection with cardiac abnormality is directed toward disordered functions of the heart, including such manifestations as irregularity, pain, and failure.

These advances of the last century or so in our knowledge of anatomical and physiological abnormalities of the heart have been brilliant and of great value. Their very brilliance may blind our eyes to the fact that they tell us nothing about the main problem—the ultimate causation of the heart disease. Control of almost any disease requires some knowledge of its cause. Thinking about the prevention of heart disease tends to turn our attention away from its immediate and obvious manifestations and to focus it upon the underlying and causative disease process. Knowledge of the etiological factors involved in heart disease is still only fragmentary but during the last twenty years many contributions to this knowledge have been made. It is now possible to recognize several groups of diseases which injure the heart and to think of heart disease in terms of its cause as well as in terms of the alterations in structure and function which are associated with it.

On the basis of these three concepts a given patient with heart disease may be classified in terms of structural change, in terms of functional disorder, and in terms of causative disease process. It would be possible to discuss the problem of heart disease from the points of view of these three diagnostic subdivisions. We shall

gain a more nearly precise idea of the problem however, by first making some observations upon the natural history and course of heart disease.

## THE COURSE OF HEART DISEASE

The various groups of etiological factors, diverse as they are, exhibit certain similarities in their effects upon the heart. First, they injure the essential muscle of the heart pump directly and secondly (and chiefly), they work evil by imposing upon the heart muscle continuous and, in the long run, insupportable overwork. They impose their burden mainly by causing conditions such as valvular disease or increased vascular resistance. The heart is an organ of enormous patience and durability and it commonly survives this overwork for years, often for decades but eventually it may meet defeat. Its final surrender is marked by a group of signs and symptoms which we recognize as indicating heart failure. Heart failure is the usual cause of death in heart disease.

Thus in a general way chronic heart disease may be said to consist of three stages or periods, namely a *period of injury*, when the causative disease is active, an *asymptomatic period* when heart disease is clearly present but during which it produces no symptoms, and a *period of symptoms* in which changes in the essential functions of the heart lead to disabilities and eventually may result in death. This period of symptoms in turn may be divided into two stages—a stage of *diminishing cardiac reserve* and a stage of *congestive failure*.

A patient may be cited to illustrate this division of the course of heart disease into arbitrary periods or stages.

H. M. was the son of a physician, and he lived in the mid portion of Pennsylvania. At the age of nine years he had a severe bout of rheumatic fever. A second attack of rheumatic fever occurred at eleven, and a third at twelve years. Thereafter there were no manifestations which could be construed as indicating active rheumatic fever. We may refer to these three years as comprising the *period of injury*. Some months after the third rheumatic episode he was found to exhibit clear signs of valvular disease. At this time he presented no symptoms or signs of disordered cardiac function. At his father's request he refrained from the more strenuous varieties of sport, but with this exception he led an essentially normal life. He selected an occupation which permitted him to fulfill the hundred year old recommendation of James Hope for "a tranquil life with respect both to the body and the mind" and he settled on his father's advice in a city noted for the moderate temper of its climate. Thus essentially normal life this freedom from cardiac symp-

toms, endured for over eighteen years. We refer to this term of years as the *asymptomatic period*.

Then he lost his job and felt forced to attempt what for him was unsuitable and excessive work, involving physical strain and severe exposure. Some months later he was conscious of a decrease in his tolerance for work. He began to suffer from dyspnea upon the performance of a degree of effort previously accomplished with ease. Then he observed that his feet were often swollen, especially at the end of the day. Examination at this time showed a considerable enlargement of his heart. At thirty-two, following an attack called influenza, the full blown picture of failure with congestion developed. At thirty-three, he died a "cardiac" death. These three years we designate the *period of symptoms*.

In the case of many patients, of course, such a succession of stages is less clear. For example, the period of injury may never end and may coincide throughout with the other two periods. Such simplifications are artificial but often helpful in visualizing the course of disease and in working out a plan of management.

#### THE PREVENTION OF DEATHS FROM HEART FAILURE

If one thinks of heart disease in terms of these three periods it is obvious that there are two lines of action, either of which if successfully followed would tend to prevent deaths from heart failure. These are as follows:

- 1 The prevention or control of the disease processes underlying heart disorders
- 2 The prevention or relief of heart failure itself

#### THE CONTROL OF THE CAUSES OF HEART DISEASE

We consider now the main groups of conditions believed to underlie heart disease, with a view to estimating the possibility of their control. It is clear that although the incidence of the several types of heart disease varies with the times, with race, with geographical location and with mode of life, yet in all groups in the United States the chief causes are similar. In brief, it appears that something over 80 per cent of the chronic heart disease is due to three great underlying causes—syphilis, rheumatic fever, and the so-called hypertensive and vascular diseases. Taking the country as a whole it appears that we may ascribe about 10 per cent of the heart disease to syphilis, perhaps 20 per cent to rheumatic fever, and some 50 or 60 per cent to that group of miscellaneous and poorly understood diseases which in our ignorance we lump together (as our forefathers lumped the fevers) under such terms as hypertension, arteriosclerosis, vascular degeneration, and the like.

These three groups of conditions differ in their susceptibility to control. Knowledge is available and methods are known which if properly applied would prevent a considerable proportion of the heart disease due to *syphilis*. There is evidence to indicate that if a high proportion of patients with syphilis were treated adequately in the early stages two desirable results would accrue, the occurrence of syphilitic heart disease in these patients would be diminished and the incidence of syphilis in the community would fall. The adequate treatment of early syphilis is not only a curative procedure but also a preventive one, directed toward reducing the spread of the disease in the community and the development of late complications in the individual. To secure early and adequate treatment for every infected person is a public health problem of some magnitude but there is nothing to indicate that it is insoluble. Whatever plan of campaign against syphilis may eventually be adopted, every patient with early syphilis who consults a physician offers him an opportunity to prevent heart disease in a direct and important way.

In spite of the rapid accumulation of information about *rheumatic fever*, we still have no precise knowledge of its cause or of specific measures by which we can prevent it or even cure it. However, in the individual patient much can be done to decrease the number of recurrences and to minimize the injury to the heart. The judicious use of rest and the influence of climate, and a realization of the danger of recurrence that lies in acute respiratory infections may make the difference between disability and health. Here again the responsibilities and activities of the practicing physician are chiefly those of prevention.

Heart disease which results from *hypertension or arterial disease* is at once the most frequent and the most discouraging variety. In hypertension and arterial degeneracy we deal with conditions we do not understand, the causes of which are still unknown. It appears that constitutional factors are concerned and we have some knowledge of trigger factors (such as obesity, emotional tension, and the menopause) which may set off the mechanisms which lead to persistent hypertension. Concerning the mechanisms themselves we are still much in the dark. We do our best to supply helpful régimes for individual patients, but our most hopeful procedure is to encourage competent investigation into the intricate and vital problems of hypertension and arterial disease.

There is another cause of heart disease which is subject to control. This is *thyrotoxicosis*. The danger of permanent injury to the heart emphasizes the importance and usefulness of the early diagnosis and treatment of thyrotoxicosis.

On the whole, however, we are driven to the gloomy conviction that except in the case of syphilis, effective control of the chief causes of heart disease is at present beyond our power, although many modifying influences of a beneficent type do exist and may be utilized.

#### THE TREATMENT OF HEART FAILURE

Our second line of action is the direct therapeutic attack on congestive heart failure. In the last decade our knowledge of the genesis, the mechanism, and the effects of heart failure has gone steadily forward, largely as a result of the application of exact methods of observation to patients exhibiting heart failure. It is found that, in general, all successful therapy of heart failure acts by resting the heart. This rest may be brought about by reduction of the heart's work (e.g., by bodily rest, sleep, diminution of heart rate, or thyroideectomy), or by improvement in efficiency (as when digitalis acts directly on the heart muscle, strengthening it so that it can perform its task with shorter initial fiber length and therefore with less expenditure of energy). Thus advance in knowledge has led to an increase in our ability to cope with this familiar and disturbing condition.

Treatment of congestive heart failure is often successful and encouraging, for a short while. Occasionally it is possible to manage so well that such a patient may have years of comfort, but as a rule (in spite of new knowledge) when a patient with chronic heart disease develops the classical evidences of congestive heart failure he is sentenced to death. We may secure a reprieve, but he will rarely be pardoned.

Besides the somewhat bitter lessons of experience with patients there are some theoretical reasons for believing that, in most cases, heart failure is associated with irreversible changes in the myocardium, changes which no treatment now known can be expected to alter. The direct attack on failure is then not to be expected to offer an acceptable solution of the problem of heart disease.

#### THE PREVENTION OF HEART FAILURE

Fortunately our survey of the course of heart disease reveals one more possibility for useful activity. The interval elapsing between the acquisition of heart disease and the development of symptoms which limit the patient's activities and happiness has been designated the *asymptomatic period*. The duration of this stage is not fixed but varies within wide limits. In one case there may be no such period, in another it may last for decades. During this period, whatever its length, the patient is not disabled. One who watches patients over periods of years is struck by the fact that some persons with obvious heart disease are able to live happy and productive

lives for many years. This conviction has recently been supported by the careful work of R. T. Grant<sup>4</sup>, who made a study in prognosis in which he followed for ten years the after histories of a thousand men with heart disease. It appears from this study that the outlook for these patients is less gloomy than it is usually thought to be, more than half survived the ten year period and many of the after histories are summarized as "uneventful and unchanged." Moreover, in the majority of those who died during the ten year period there was not a steady progression downward but the situation remained essentially unchanged until the onset of congestive heart failure.

These observations lead us to consider the factors which, by reducing the cardiac reserve or by precipitating the onset of heart failure, may influence the duration of the asymptomatic period of heart disease.

It is to be expected, and it turns out to be true, that an important factor in the progression of heart disease is the degree of activity or advance of the original causative process. The recurrent activity of rheumatic fever, the persistence of elevated blood pressure, the progression of syphilitic mesoarthritis, or the advance of arterial degeneration, may determine the duration of the asymptomatic period. Our first obligation then is to proceed (if we can) against these primary processes, carefully weighing the perils of action against those of inaction. Further, these disease processes may develop in patients who already have heart disease on the basis of some other primary cause, serving in this instance perhaps to precipitate the onset of severe symptoms. For example, there is a definite group of patients with rheumatic valvular disease who suffer little or no handicap until they develop hypertension, or coronary arteriosclerosis, or thyrotoxicosis. In such a patient the early recognition and early treatment of even mild thyrotoxicosis may prevent the premature development of cardiac failure, and may well be the most important act of the physician in postponing the date of onset of cardiac disability and in prolonging the patient's life.

In addition to these processes which can cause heart disease alone or in combination there is a group of conditions which are not, save in exceptional instances capable of causing heart disease by themselves, but which are quite capable of making it worse when it is already present. Our present knowledge of these conditions has been obtained by several quite different lines of investigation.

In the first place is the long list of observations made by many students of heart disease (from James Hope<sup>5</sup> to Paul White<sup>6</sup>, R. T. Grant<sup>4</sup>, Carev Coombs<sup>7</sup> and Vaquez<sup>8</sup>) who have followed their patients over periods of years,

and have noted the effect on the course of their lives of various intercurrent influences. The accumulation of these observations has gone forward for upwards of a hundred years and while their interpretation in a given case may be open to some doubt, collectively they are certainly significant.

The second line of investigation which has thrown light on these precipitating factors is the study of influences affecting the course of heart failure already established. They are exemplified by the recent investigations of Harrison and his colleagues into the factors leading to exacerbation or improvement in the symptoms and signs of heart failure.

A third type of evidence is that afforded by the extensive research of the last ten or fifteen years into the factors influencing the work demanded of the heart. Many of these highly significant researches have been concerned with the cardiac output (the amount of blood actually pumped by the heart) under various conditions (Giollman<sup>4</sup>). Others, including the extensive observations of Blumgart and Weiss<sup>1</sup>, have dealt with the actual velocity of blood flow. Still others have dealt with increased vascular resistance. These last include not only the innumerable studies of systemic hypertension, but those which bear on the rôle of increased resistance in the pulmonary circuit in adding to the work of the right ventricle.

These three lines of investigation tend strongly to support each other. On the basis of a combination of evidence we may make a list of conditions which may be shown:

1. To increase the work of the heart
2. To increase the severity of heart failure already present
3. To act as factors tending to precipitate heart failure in patients with heart disease in the asymptomatic stage

The list of chief offenders is as follows:

I *Infections* (especially respiratory infections), or any mechanism resulting in

- a. fever,
- b. tachycardia,
- c. cough

II *Abnormal rhythms* leading to

- a. tachycardia, or
- b. pulse deficit

III *Anemia*

IV *Obesity*

V *Pregnancy*

VI *Persistent emotional stress*

VII *Physical exertion beyond the capacity of the individual*

It is, of course, well known that acute infections may act to precipitate failure in patients with heart disease. One need only refer to the death rate from heart failure during the in-

fluenza pandemic of 1918 or to the increased number of patients with heart failure one sees during the winter months as compared with summer. There may be many factors in this evil effect of infections upon the heart, and it is quite possible that the actual capacity for work or efficiency of the myocardium is depressed. We have, however, no precise knowledge of this matter while we can point out certain frequent results on infection which are known to increase the work of the heart. These include fever, tachycardia, and cough.

Fever is associated with a rise in oxygen consumption and with an associated rise in cardiac output. Tachycardia (whether associated with fever, with excitement, with exertion, or with an abnormal rhythm), is frequently a factor in the development of congestive heart failure. Enlarged hearts appear to bear tachycardia less well than hearts of normal size.

Recent work indicates that in normal animals of many groups a thick ventricular fiber is associated with a slow heart rate and a thin muscle fiber with a fast heart rate. There is evidence which indicates that the slow heart rate in animals with thick cardiac fibers is advantageous because it gives a longer recovery period, and it takes oxygen longer to diffuse through a thick fiber than through a thin one. This suggests that the optimal heart rate for persons with hypertrophy of the heart is less than the optimal heart rate of those with normal hearts.

The importance of cough in leading to cardiac fatigue is not, I believe, sufficiently appreciated, although all our three types of evidence implicate it. As has been shown by Harrison, Calhoun, and Harrison<sup>5</sup>, cough is in itself not only a considerable muscular effort, but it may cause also a reflex stimulation of the respiration. The sudden changes in intrathoracic pressure may be associated with undesirable alterations in the pressure and flow within the auricle.

Infections are then to be avoided when possible. When they occur, their injury to the heart is to be minimized by any available method, which usually means rest in bed. Specific prevention of "colds", comparable to the use of "toxoid" in immunization against diphtheria, is not now available. When it is, it may be expected to prolong the lives and activities of many patients with heart disease.

The effect of anemia is too well known to require comment. It is usually susceptible to treatment, and thus constitutes, in Burton Hamilton's fine phrase, a "removable burden". The same may be said of obesity, a fat cardiac, to paraphrase Dr. Joslin, is a discredit to his doctor. Life insurance companies on the basis of a vast experience are fully aware of the close relationship between overweight and cardiovas-

cular disease. I am told that life insurance is refused more often on account of overweight than for any other cause.

Patients in the asymptomatic stage of heart disease should, on the other hand receive an adequate diet. A diet which avoids obesity but leads, for example, to hypoproteinemia and nutritional edema merely exchanges one cardiac load for another. The existence of "beriberi heart" indicates that specific dietary deficiencies may affect the functional ability of the heart.

Pregnancy is frequent and may be said to be self limited. It offers an opportunity to study the effects upon the circulation of a condition which sometimes precipitates the onset of heart failure. The resting cardiac output during pregnancy may be as much as 50 or 60 per cent above the patient's basal level. Moreover, exertion on the part of the patient is accompanied by a disproportionate increase in the work of the heart. These burdens are to be ascribed to the considerable amount of blood which flows through the placental channels; these channels affect the circulation like any arteriovenous fistula.

The importance of emotional stress and of excessive physical exertion is clear both from their known effects upon cardiac work and their obvious relation to the progression of cardiac disease. It is noteworthy that Grant's 1000 patients, who had on the whole such benign courses, were all pensioners. Their livelihood was secure and their physical exertion could be adjusted to their capabilities. Many students of heart disease have pointed out that the duration of useful life in cardiac patients is greater in people of means than in those who are forced by necessity to do unsuitable work.

The activity of the physician during the asymptomatic stage of heart disease is mainly directed toward those influences which may precipitate the onset of heart failure. He takes the long view of the disease with the care of which he is concerned. He cannot "cure" the disease save in the rarest instances; his thought therefore turns to the prevention of its disabling or dangerous developments. His effort now is to prevent the progression of heart disease to a point when it may interfere with his patient's life. Every year that he can put off the onset of failure is a year added to the patient's active life and is the physician's contribution to the prevention of heart failure.

This contribution can be made by the individual physician dealing with individual patients. It is retail, rather than wholesale, prevention. It requires exact knowledge of the patient, and patience and wisdom in helping him plan his life. It is a lot of work. However, heart disease as such will continue to exist for

a long time, the primary causes (in general) are at the moment beyond our reach, while infection, fever, tachycardia, cough, anemia, obesity, pregnancy, excessive physical strain, and prolonged emotional stress are all subject to some control. Most of them are preventable. Their control offers, in my opinion, a hopeful opportunity in the management of heart disease.

It appears, then, that there is no royal road to the prevention of heart disease, and that a considerable proportion of the effective preventive activities are carried out by individual physicians dealing with the problems of individual patients. It is natural for one accustomed to deal with patients to emphasize this side of the picture. Organized health agencies do, of course, share actively in the struggle against death and disability due to heart disease and their contribution will naturally increase with growing knowledge. This contribution is made now by all their activities which help control infectious processes in general and those leading to better control of syphilis in particular, by all steps which lead to a more nearly adequate general standard of living, by organized resources for the care of heart disease in children, by specialized placement bureaus and other aids to suitable occupation, and by many other types of service which influence either the primary causes of heart disease or the factors tending to precipitate heart failure.

The organization of medical schools on the basis of departments has, I am sure, many advantages in administration and in the organization of teaching. It has the disadvantage, however, that it may suggest to the student differences or barriers which do not exist, for example, between the practice of medicine on the one hand and preventive medicine on the other. The development of effective methods of prevention and the growth of the preventive ideal have inevitably altered the practice of medicine. The physician has become concerned with immunization, with watching the channels of infection, with prenatal care, with the supervision of healthy babies, and with other purely preventive activities. At the same time it has become apparent that by the application of the viewpoint of prevention he can improve his care of patients already affected by disease. The problem of heart disease has been considered, and it has appeared that a considerable proportion of the physician's procedures in dealing with this group of diseases has to do with prevention. These include such diverse activities as the treatment of early syphilis, the management of rheumatic fever—and all the many exercises of wisdom and skill directed toward putting off the evil day of failure in patients with asymptomatic heart disease.

My observation has been that in a discussion

of the preventive aspects of practice it is very difficult to avoid mentioning the two best known daughters of Asklepios. These were called respectively Hygeia and Panacea and they went about doing good, the one by prevention and the other by cure. The fact of their sisterhood is often called upon to illustrate the close relationship between preventive and curative medicine. My own belief is that these two daughters of the father of medicine were not only sisters but Siamese twins. I believe that they had a common cerebrum, and I am sure that they had a common heart.

#### CANCER CURES

Some special article on a new cure for cancer always catches the public eye. The cures vary from the most grotesque proposals, through those with some pseudo-scientific basis, to remedies that have been more or less carefully studied and with the appearance of scientific accuracy. The latter type of cure is becoming more infrequent, doubtless owing to our wider knowledge of cancer, to the numerous laboratories in which new statements about neoplasms may be checked, and to a better appreciation of the fact that cancer is merely a general term for numerous different types of disease, just as acute infectious diseases comprise a rather wide group of maladies.

Strangely enough, it seems to be generally overlooked that we have perfectly satisfactory cures for cancer which are being employed every day. These cures are based on the well known biologic facts of cancer, that it is a local disease in the early stages without constitutional involvement and that a proper remedy applied in the early stages is, in the great majority of cases, effective. We would not, for instance, think that the antitoxin of diphtheria was a failure as a curative measure for diphtheria if it is not used until the seventh or eighth day of the disease, we would merely place the blame for the failure not on the antitoxin but on the late stage in which it was given. And so in cancer, two remedies—surgical excision and irradiation—or a combination of these two are quite satisfactory if applied early.

In some instances it requires a study of the neoplasm and of the patient to know which of these two remedies should be adopted. Often, as in cancer of the breast, a combination of irradiation and surgery is more helpful than either remedy alone. The technic of applying irradiation has been greatly improved in the last few years, and it will take some time to determine how efficient this new technic will

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be in making five-year cures. It is generally acknowledged that cancer of the breast, when still limited to the local tissue of its origin and without metastases, can be cured at least for a period of five years in about 75 per cent of the cases. Cancer of the stomach from its large death rate is considered the most formidable cancer, and yet in the September, 1934, issue of *Surgery, Gynecology and Obstetrics*, D C Balfour states that his records show 50 per cent of five year cures of patients with cancer of the stomach by partial gastrectomy when the cancer was confined solely to the stomach wall and a wide excision was done.

We should cease worrying about finding a new cure for cancer. The study of the biology of cancer appears to show that constitutional remedies or serums will probably never be effective. The important thing in the treatment of cancer is not to search for new cures, but to search for new methods of early diagnosis so that the efficient well known cures can be promptly applied. Unfortunately, except in the case of bone tumors, cancer does not cause pain in the early stages, so we shall have to fall back upon the teaching of the late Sir James MacKenzie, and emphasize the observation of disease in its incipiency and a careful and thorough study of what seem to be casual symptoms, as the indigestion, belching, heartburn in cancer of the stomach and bowel, the slightest irregularity in contour or substance of the breasts, or any unusual appearance on the skin or mucous membrane in any portion of the body. These signs or symptoms usually appear before the later symptoms of loss of weight, bleeding, ulceration or marked abnormal discharge. If we study more thoroughly things that appear to be casual and trivial in the beginning of the disease, and consequently make an earlier diagnosis, cured cases of cancer will increase enormously—J Shelton Horsley, M.D., *Bulletin of the American Society for the Control of Cancer*

**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES**

EDITED BY RICHARD C CABOT, M.D.

CASE 21031

## PRESENTATION OF CASE

A sixty-eight year old married English house wife entered complaining of pain in the right side.

Six months before entry following an unusually large amount of housework which left her quite tired, she began having cough every morning and evening, raising a small amount of white phlegm which was never foul smelling or blood streaked. The cough continued unchanged and was not associated with any chest pain. Five weeks before admission she suddenly experienced an attack of severe pain in the right lower quadrant, spreading to the left lower abdomen. The pain felt somewhat like labor pains. The following day she had very severe pain at the level of the left costal border made worse by breathing, coughing or turning in bed. A physician was said to have told her that she had a "heart cough". In about two days she felt much better and was up and around until approximately two weeks before entry when after a hearty meal, including a large amount of wine she again experienced lower abdominal pain which rapidly radiated to the right lower ribs. She remained in bed for about a week and was soon able to walk about the house. The pain suddenly returned two days before entry following supper. This time, however it was bilateral and much worse in the region of the right costovertebral angle. She was nauseated but did not vomit. The pain continued to be very severe all that night and up until admission, although she received some relief from hypodermic injections. Her cough had been no worse during these attacks.

The family and marital histories are non contributory.

The patient had lived in the United States for the past twenty five years. She had the usual childhood diseases and had not been exposed to tuberculosis. During the past year she had developed slight shortness of breath upon exertion but no orthopnea or edema. She had always been constipated, moving her bowels approximately every two or three days. There were no urinary symptoms. The menopause occurred at the age of fifty two.

Physical examination showed a well developed

and nourished elderly woman lying in bed in acute distress, complaining chiefly of pain in the right costovertebral angle and extending laterally to the axillary line. Examination of the chest showed moist rales at both bases. Both diaphragms moved only slightly with respiration. The heart showed considerable enlargement to the left. There was a soft systolic murmur in the apical region.  $P_2$  was greater than  $A_2$ . The blood pressure in the right arm on the evening of admission was 200/90. The following evening it was 160/78. The blood pressure in the right leg was 220/130. The abdomen was rather protuberant and showed marked tenderness without spasm in the right costovertebral angle extending to the right flank. There was moderate arteriosclerosis of the peripheral vessels. There was no edema.

The temperature was 102°, the pulse 130. The respirations were 28.

Examination of the urine showed a specific gravity of 1.022 with a slight trace to a trace of albumin and a sediment containing 6 white blood cells 1 red blood cell and a few granular casts. Examination of the blood showed a red cell count of 4,470,000, with a hemoglobin of 80 per cent. The white cell count was 46,000, 88 per cent polymorphonuclears. A stool showed a negative guaiac test. A Hinton test was negative. The non protein nitrogen of the blood was 36 milligrams. An electrocardiogram showed normal rhythm rate 105, left axis deviation, a partially inverted  $P_3$  and slight slurring of the Q R-S complexes in all leads.

An abdominal x ray film showed no unusual soft tissue masses. There was no evidence of gas beneath the diaphragm, which was smooth in outline. The chest film showed prominence of the lung markings extending throughout both lung fields and producing generalized haziness.

She was put on digitalis and given a quarter of a grain of morphine every three hours, with the relief of her abdominal pain. Her temperature remained elevated ranging for the most part between 100° and 102°. Examination the day following admission showed that she still had considerable tenderness with some spasm in the right flank. Her blood pressure on both arms was 140/80 and it was felt by several examiners that she did not have any marked degree of left sided cardiac enlargement. Her white blood cell count ranged between 20,000 and 30,000 with a polymorphonuclear count of about 85 per cent. Her urine continued to show a slight trace to a trace of albumin with a sediment containing numerous white blood cells, an occasional cast and red blood cell. Three out of five stool examinations showed positive guaiac tests. A urologist found right costovertebral tenderness and spasm of the muscles of the back. He could not rule out a perirenal infection.

On the fifth day she appeared much worse and still had marked spasm of the right costovertebral angle and quadratus lumborum. Abdominal distention was marked and was not relieved by enemas or stapes. On the eighth day the pain on the right side had disappeared but now there was severe pain, tenderness and spasm on the left. The white blood cell count was still elevated. The pain on the left side continued but was not so severe as on the first day. On the morning of the fourteenth day the right leg below the knee was cold and blue, and there was marked tenderness in the popliteal space. No pulsation could be felt. She rapidly failed and died that day.

#### DIFFERENTIAL DIAGNOSIS

**DR ARTHUR W ALLEN** This is a very long and complicated history of a fairly old person. The illness dated from six months before entry with relationship to a cough which was only slightly productive and without pain. It may or may not have some bearing on the story. I think likely the physician who thought this cough was due to her heart condition was correct.

Five weeks before she came in she suddenly experienced an attack of severe pain in the right lower quadrant which spread to the left lower abdomen. This would seem to point to large bowel pathology. It is definitely in the right lower quadrant and definitely left lower abdomen, the two areas that we usually feel are practically reserved for large bowel pain.

The severe pain at the level of the costal border which made her short of breath and so forth may have been a pleuritic affair, but it cleared up rather quickly.

The note that seems to stand out in the early part of her history is the recurring episodes of discomfort. One wonders whether this pain in the lower abdomen could have been simply a gas pocket, or something of that nature, or whether there was some serious underlying pathology even at that time. The fact that she was known by Dr. Wallwoik to improve on rest in bed, so far as her early symptoms were concerned, and the fact that she had dyspnea, palpitation, was sixty eight years old and had arteriosclerosis make it almost certain that she had something in the way of an arteriosclerotic heart disease. Whether we can tie up this condition of the heart with her present illness is the problem. She came in with a temperature of 102°, so obviously there was some sort of an infectious process going on.

One very striking feature in the examination is the white blood cell count of 46,000. There are not very many conditions that will yield so high a white count in an acute illness. Pneumonia will perhaps do it, perhaps an early fulminating peritonitis. Traumatic rupture of the spleen strangely enough will give a high leuco-

cytosis. Mesenteric thrombosis is the common thing that we see that will give an early very high leucocyte count. Is it possible for a person to have mesenteric thrombosis even of sufficiently mild degree to live nearly three weeks after the onset without any necrosis taking place and without perforation of the bowel? It seems rather unlikely that such a condition could have been present. One might perhaps better explain this chain of symptoms on multiple emboli, small emboli coming in different locations not sufficiently large to produce fatal termination. These could be small enough, even in the region of the bowel, not to produce a necrotic area. The story of pain and tenderness in the right costovertebral angle at entrance makes one definitely think of infarct in the kidney. I am not sure about the blood cells in the urine in infarcts of the kidney. I had always thought that there would be blood cells in the urine, this woman had none. I suppose that one might have to consider it anyway. The thing that we are not sure about is whether she had abnormal peristalsis in the abdomen. It is not mentioned. I believe there would be some definite effect on normal peristalsis if these embolic processes had occurred in the bowel. Obviously she did not have ruptured bowel, or gas would have been present under the diaphragm.

Another thing that interests me about the examination is the difference in the blood pressures of the upper and lower extremities. On admission the pressure in the right arm was 200/90, the next evening it was 160/78. I suppose that amount of variation might occur. One does not necessarily have to consider the possibility of rapid change in the blood pressure due to tumor of the adrenal cortex or anything of that sort, but the blood pressure in the right leg was 220/130. I take it that that was at the same time that the arm showed 160/78. That probably means that there was some constriction of the blood flow to the right leg which raised the blood pressure. Could that have been due to pressure on the iliac on that side by a tumor, or was it something in the artery itself? The right leg afterwards became gangrenous suddenly from either thrombosis or embolism and possibly this change in blood pressure was a fore-runner of that final condition.

I am not sure whether one ever sees subacute bacterial endocarditis in a patient of this age. I never have happened to, but if such a condition were present I think it would explain the whole chain of events with multiple infarcts here and there and a final infarct or thrombus superimposed on an infarct in her popliteal artery or in the femoral artery at the bifurcation. The temperature would have to be explained on the basis of infection somewhere, perhaps superimposed on an infarct in the

kidney or elsewhere, unless she had some generalized blood stream infection. I should like to know what Dr Sprague has to say about a person of that age having subacute bacterial endocarditis.

DR. SPRAGUE I think we have never seen it in a person so old as that.

#### CLINICAL DISCUSSION

DR. WALTER BAUER From the time this patient entered the ward until the time she arrived in Dr Mallory's department there were two questions continually being raised (1) did she belong on the medical or on the surgical ward, and (2) what was the diagnosis? Dr Wallwork saw this patient on a number of occasions before she entered the hospital. After she had been on the ward for some time he wrote in saying that he thought she was suffering from diverticulitis. It was apparent from the time she arrived that she was acutely ill. She was suffering intense pain with beads of perspiration standing out on her forehead and was not comfortable at any time in spite of the amount of morphine that was administered. I never paid enough attention to the pain in the costovertebral angle. As I talked with her and observed her I thought she had first right lower quadrant pain and then left lower. She never had true spasm but she had tenderness and did not like to be palpated. I was of the opinion that she probably had a diverticulosis and a diverticulitis, and that she had a rupture of one or more diverticula and a small walled-off localized abscess. She was seen by a number of other men. One surgeon thought she might have acute appendicitis or an abscess and that conservative treatment was in order for the time being. An other surgeon also thought she had diverticulitis. One of our medical confrères thought that she might have an ulcerating lesion in the large bowel and that was the reason for the positive guaiac and the whole story. I felt that it was not a surgical condition and that she did have a ruptured diverticulum with a localized walled off abscess. I felt that conservative treatment was in order for the time being.

The day before she died she had symptoms of obvious obstruction in the vessels of the right leg and at that time I said that I thought she had an embolus and that as long as we had no other obvious cause that the most likely source of this embolus was a thrombosis of the lower portion of the aorta, and that a piece had dropped off into the right femoral artery but unfortunately I did not have sense enough to look that up with what had been going on before.

DR. TRACY B. MALLORY Dr Holmes, can you give us any help?

DR. GEORGE W. HOLMES She had two x-ray examinations of her chest. She has a rather high diaphragm on the left side. I should like to

know if possible whether it moved during respiration. There is nothing in the note to say that it did. She also has a poorly defined heart shadow, not an enlarged heart particularly, but a heart that we would suspect of being rather weak. It is not so clear cut as a normal heart should be. There is a diffuse fine mottling throughout the lungs. After rest in bed on digitalis the heart shadow became more sharply defined and distinctly smaller but it is difficult to say whether the process in the lungs has changed. It may have cleared up some. Such a process as we see here may be due to poor circulation, it may be of blood vessel origin. I have seen changes like that in leukemias. I would not want to make that diagnosis, however. We have a lateral view which shows the aorta quite well and it is not dilated. There is no evidence of calcification.

We have two films of the abdomen. The left kidney shows up unusually well. It is not increased in size or abnormal in shape. It is rather more dense than usual. I cannot make out the right kidney except possibly the lower pole. There is no markedly dilated bowel. There is a considerable amount of gas. There is nothing in the bones. The appearance in her chest might go with a widespread metastasis but there is nothing to back that up. Most of the gas is in the large bowel. That band might represent the small bowel but I do not think that is particularly unusual. We see gas in the small bowel occasionally. In this plate she has a distended bladder. There are no shadows that I can interpret as stones. I do not know what that shadow is. It may be in the bowel. The liver does not seem to be enlarged or unusually low. None of these plates are high enough to include the spleen.

We have a film taken in the upright position. I suppose it was taken to show whether there was gas beneath the diaphragm and whether there was a fluid level in any part of the gastrointestinal tract. This is the diaphragm on the right, on the left it is not distinct. We have a shadow here which is in the region of the spleen and within it there are two shadows of diminished density with fluid levels. That is rather high for the colon. I would like to know more about these shadows. Films taken in lateral views would probably help. The shadows could be cavities containing gas outside the gastro-intestinal tract but with the evidence we have I am not certain.

DR. FLETCHER H. COLBY I saw this patient several times on the medical ward in consultation. My job was to try to determine whether she had perirenal infection. Many years ago one of the best old French internists said that there was no more difficult diagnosis to make than that of an early perinephric abscess and no more easy diagnosis than one in the later stages. That is perfectly true. This patient had signs that were suggestive of perirenal in-

fection and other signs that were very much against it. She had tenderness and spasm of the muscles in the costovertebral region and a temperature which was consistent with a perirenal infection. Her urine also was consistent with it, with some white blood cells, occasional red cells and albumin in the urine. Looking back into her past history the possibility of an acute respiratory infection as a starting point for perirenal infection seemed good until Dr Wallwork told us that this was definitely a cardiac affair, so that in the past history there was nothing to suggest a focus for perirenal infection. There was no obliteration of the psoas muscle on the right side, which is against perirenal infection. The symptoms had gone on long enough, however. This was one continuous story, so that definite changes should have taken place. The white cell count was 46,000, which is very much higher than in perirenal infection, but I could not be sure that she did not have an early perinephric abscess on the right. The next time I saw her the symptoms on the right had entirely disappeared and she had pain on the left side. I do not know what the patient eventually had, but it was quite evident that she did not have perirenal infection.

DR MALLORY Have you anything to add, Dr Wallwork?

DR D W WALLWORK I have nothing more to add except that any attempt to make a diagnosis was even more difficult in the patient's home. I attached considerable significance to her weight loss of twenty pounds during the past year and thought diverticulitis or malignancy the most likely diagnosis.

It took courage of a sort to give her morphia during that first attack of pain. She had severe right lower quadrant pain, nausea, fever, and leucocytosis, signs that every layman knows are associated with appendicitis. The absence of corresponding localized tenderness and the obviously great surgical risk decided me against exploration. Needless to say, when I learned later that neglected acute appendicitis had been mentioned by someone as a possible cause of the patient's death, I helped in every way possible to obtain permission for the postmortem examination.

#### CLINICAL DIAGNOSES

- Intestinal obstruction
- Embolus, right popliteal artery
- Congestive failure
- Bronchopneumonia
- Hypertensive heart disease

#### DR ARTHUR W ALLEN'S DIAGNOSES

- Arteriosclerotic heart disease
- Thrombi in the heart
- Multiple infarcts of the kidneys
- Embolus of the right femoral artery

#### ANATOMIC DIAGNOSES

- Arteriosclerosis of the aorta with ulceration and thrombosis
- Thrombus of the splenic and of both renal arteries
- Infarction of the spleen, total
- Infarction of the right kidney, total, of the left kidney, subtotal
- Embolus to right popliteal artery
- Anomaly—aberrant renal artery to lower pole of left kidney
- Bronchopneumonia, early

#### PATHOLOGIC DISCUSSION

DR MALLORY The autopsy explains most of the symptoms quite satisfactorily. I have here a specimen which I will pass around. It shows the upper portion of the abdominal aorta and the two kidneys. We found a severe grade of arteriosclerosis with extensive thrombus formation in the lower thoracic and upper abdominal portions of the aorta and extension of the thrombus into both renal arteries and into the splenic artery. She had complete infarction of one kidney and of two-thirds of the other one, the final third of this second kidney being saved by an aberrant renal artery which left the aorta at a level far below the other one and well beyond the lower end of the thrombus. The preservation of this little remnant functioning renal tissue permitted her to live for three weeks after the onset of symptoms. The spleen was likewise entirely infarcted but in this instance old lesions were present at either pole, whereas the central zone showed quite fresh necrosis.

The heart was negative. She did not have any marked coronary sclerosis. The arterio sclerosis was pretty well limited to the aorta. We did not have permission to examine the leg locally. She may have had a separate thrombus there, but I think it is more probable that a piece of this thrombus in the aorta broke loose and plugged the iliac artery.

There was no evidence of infection except for the very slightest terminal bronchopneumonia, so that I think the white count from beginning to end was due to infarction. Dr Barney had one case of bilateral renal infarction that also had a very high leucocytosis.

DR J DELLINGER BARNEY I do not remember the leucocytosis in that case, but I was thinking how similar this case was to mine. This woman had complete infarction of the right kidney, so that at the time of operation when the kidney was cut into, it did not bleed at all, it was like cutting into a piece of wood. She had pain of the most intense variety when she came in, not only in the costovertebral angle but in the midaxillary line and through to the median line, rather different from the pain of perinephric abscess or a cortical abscess of the kidney, although we did not lay much stress on

that point at the time. In looking it up and reporting the case with Dr. Mintz, and making that a basis for considering the entire question of renal infarcts we were certain that very few were diagnosed during life. The story of this case parallels mine so closely that the possibility of renal infarction came to my mind as the summary was read.

DR. MALLORY Dr. Barney's case was, however, quite different in origin. There the primary thrombus was in the vena cava and extended into the renal vein, a true venous infarction, whereas this case was arterial.

A PHYSICIAN Did you find anything in the mesenteric artery?

DR. MALLORY No, they were negative, and the intestines were normal.

A PHYSICIAN Is there any explanation for the right lower quadrant pain?

DR. MALLORY No, unless it was referred from the right kidney. It is certainly some times seen in pyelitis.

A PHYSICIAN Were there any adhesions around these kidneys?

DR. MALLORY There were very marked adhesions.

A PHYSICIAN I operated on one case several months after a renal accident that was not diagnosed and found in the midst of a large abscess an almost complete cast of necrotic kidney surrounded by a narrow shell of cortex that was still alive.

DR. MALLORY The pain of renal infarction can be severe. We have seen two cases that have been explored.

DR. HOLMES Did the lungs show any cause for that mottling?

DR. MALLORY We found nothing except a bronchopneumonia and it was so slight that I felt it was simply a terminal event. I do not know how long however.

DR. HOLMES If this patient could have stood it, it would have been interesting to give an intravenous dye. It might have shown at least that the kidneys were the source of trouble.

#### CASE 21032

A sixty six year old white laborer entered complaining of pain and soreness over the lower end of the sternum.

During the past two months he had been troubled by pain over the lower end of the sternum and in the pit of the stomach especially when he swallowed food. The food seemed subjectively to lodge or meet some obstruction as it entered the stomach. The pain was of a rather mild burning character was more severe upon the ingestion of hot fluid or fruit juices, and occasionally radiated to the back between the scap-

ulae. During this period he had a good appetite but felt very full in the pit of his stomach after he ate only a small amount of food. Three days before entry he suddenly felt rather weak and broke into a cold sweat for a few moments. For the next few hours he felt weak and exhausted. At the evening meal that day he again felt the low epigastric pain on eating just as it had been during the past two months. As he got up from the table the pain increased in intensity and radiated up through the chest into the back and into the arm, where it was felt as a tingling sensation clear to the finger tips. This lasted from two to five minutes. He was not forced to lie down but did seek a chair. He just felt exhausted and did not feel faint. There was no palpitation or shortness of breath. The pain was immediately followed by vomiting without nausea. The vomitus contained undigested food without blood. Since this attack he felt very weak and was barely able to walk to the station the following day to take a train for Boston.

In spite of the fact that he had done very little work during the past year he had felt somewhat exhausted most of the time. He did not believe that there had been any loss in weight or appetite. He had slight constipation during the past year requiring oil about once every ten days. There was no diarrhea.

His family and marital histories are non contributory.

For the past twenty years he had been seen in the genito-urinary clinic of the Out Patient Department for urethral stricture which he acquired twenty years before entry. During this period he had been admitted to the house three times, the last time nineteen years before entry, for a prostatic abscess and acute epididymitis.

Physical examination showed an elderly rather plethoric, slightly cyanotic man. There was slight sclerosis of the retinal vessels. The chest was slightly barrel shaped. The heart was slightly enlarged to the left, the left border being 9.5 centimeters from the midsternal line and 0.5 centimeters outside the midclavicular line. The sounds were very distant and the rate rapid, about 100. The first sound at the lower left sternal border was roughened and showed gallop rhythm. No murmurs were heard. The radial arteries were tortuous and thickened. Prostatic examination was negative.

The temperature was 98°. The respirations were 20.

Examination of the urine showed a specific gravity of 1.030 and was negative. The blood showed a red cell count of 5,800,000, with a hemoglobin of 90 per cent. The white cell count was 13,500 76 per cent polymorphonuclears.

During a physical examination on the third day he complained of pain in his left back and died suddenly without agonal symptoms.

## DIFFERENTIAL DIAGNOSIS

DR EDWARD F BLAND Any diagnosis to reasonably cover the course of this illness would have to explain three phases of the symptomatology. First, he had been a well man apparently up until two months before his exitus, then he began to have symptoms pointing to the lower end of the esophagus perhaps, not only pain but also soieness related to food and presumably not related to exertion. In other words he had a typical pain in the chest, apparently low grade with a sense of obstruction in the lower portion of the chest and pit of the stomach. Apparently this continued the same until the second phase of the disease, namely, the acute phase, which presumably was related to the preceding symptoms because it began with what appears to be mild shock, and then the appearance of pain similar to that he had had before, but this time more severe, passing into the chest and radiating down both arms as far as the fingertips. That ought to be an important point in differential diagnosis. It would seem then that the lesion must be above the diaphragm. Then we come to the third phase of his illness in which he died suddenly with pain in his left back.

Physical examination does not help a great deal except in a negative way.

There is one point in the past history that seems important, namely, we know that twenty years before admission he had had a genitourinary infection. Twenty years after an initial infection is the optimal time for cardiovascular syphilis to appear. Further we have to explain the sense of pressure in his lower chest for two months before his acute illness. The most reasonable diagnosis in this case would seem to be cardiovascular syphilis with a probable thoracic aneurysm which was causing a certain degree of pressure in the lower mediastinum, which increased in size perhaps three days before he died, and then he died suddenly with pain in his left back, possibly a rupture.

There is one discordant note, namely, that according to the physical examination he did not have aortic regurgitation. He had a barrel-shaped chest. The examiner felt that the heart was slightly enlarged, therefore the heart must have been presumably more than slightly enlarged, and he had gallop rhythm indicative of cardiac weakness. If he did not have aortic regurgitation it is difficult to account for this on the basis of an aneurysm alone. He was sixty-six years old and presumably had some coronary disease.

I certainly should favor, first, cardiovascular syphilis. A second possible diagnosis would be coronary disease and coronary thrombosis, but it is difficult to explain his prodromal phase of two months on the basis of coronary disease

alone. I do not believe that he had an arteriosclerotic dissecting aneurysm, although it is entirely possible. The two points against it are *first* the absence of abrupt onset—in our experience here, which covers eighteen cases, and also the experience of Shennan, which was reviewed in an extensive treatise of the Medical Research Council a few months ago and included three hundred cases, the symptoms may be very varied but the most constant feature is the abrupt onset of dissecting aneurysm—and *secondly*, none of these cases have had pain referred to the arms, it is usually in the chest or elsewhere, often the neck and chest, but none in the arms. Pulmonary embolism seems out of the picture. I do not believe he had malignancy. He appeared to be in too good condition for that, and it would not adequately explain his subsequent course. I think that cardiovascular syphilis is most probable.

I believe we could establish the clinical diagnosis if we knew three other factors, first, his Hinton reaction, secondly, the electrocardiogram, and thirdly, what his x-ray showed.

DR PAUL D WHITE We would like to know his blood pressure also. The only thing I have to add is that Dr Bland need not worry about the absence of aortic regurgitation in diagnosing a possible aneurysm here, it is not usual for an aortic aneurysm to be associated with aortic regurgitation. Coronary disease or insufficiency (whether or not from narrowing of the coronary mouths by an aortitis) can, as Dr Bland suggests, account for the cardiac findings themselves.

## CLINICAL DIAGNOSIS

Coronary occlusion

## DR EDWARD F BLAND'S DIAGNOSES

Cardiovascular syphilis  
Coronary thrombosis ?

## ANATOMIC DIAGNOSES

Coronary thrombosis  
Infarct of the heart with rupture  
Hemopericardium  
Chronic passive congestion  
Cholelithiasis  
Hydonephrosis, right

## PATHOLOGIC DISCUSSION

DR TRACY B MALLORY The autopsy in this case showed that the pathology was not in the aorta but entirely in the heart. He had an old coronary thrombosis with a fresh infarct of the heart which had ruptured to produce a hemopericardium and, I imagine, cardiac tamponade as the terminal incident. The thrombus in the coronary seemed to be a very old affair, almost

entirely calcified, whereas the infarct was obviously quite fresh. The muscle cells were actively degenerating, and there was extensive polymorphonuclear infiltration. The histologic appearance was that of an infarct of about four days' duration, which is about the period at which rupture becomes not infrequent. The aorta showed only moderate atheroma and there was no evidence of luetic involvement.

DR. WHITE Was an electrocardiogram done?

DR. MALLORY No

DR. BLAND Is there any explanation for his symptoms which were related to the gastro-intestinal tract?

DR. MALLORY We found nothing that would adequately explain them except possibly cholelithiasis, but so many people have a few gall stones without symptoms that it is fairly questionable whether that had anything to do with it. There was no cholecystitis, simply a few stones in the gall bladder. A purely incidental finding was a slight hydronephrosis on the right.

# The New England Journal of Medicine

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## AN IMPORTANT BILL

ONE of the bills now before the legislature of Massachusetts is of especial interest in that it will impose upon corporations, organized under Chapter 180 of the General Laws or other Laws and aids, more definite responsibilities than now exist in the submission of reports to the State Department of Public Welfare

Purely charitable organizations have been exempt from taxation and will continue to enjoy this privilege provided that full compliance with the provisions of the proposed act is carried on by such bodies The bill referred to is that of House 12 and applies to the organizations specified in Section 2 of Chapter 180 formed for any civic, educational, charitable, benevolent or religious purpose, for the prosecution of any antiquarian, historical, literary, scientific, medical, artistic, monumental or musical purpose, for establishing and maintaining libraries, for supporting any missionary enterprise having for its object the dissemination of religious or educational instruction in foreign countries, for promoting temperance or morality in the Common-

wealth, for encouraging athletic exercises or yachting, for encouraging the raising of choice breeds of domestic animals and poultry, for the association and accommodation of societies of Free Masons, Odd Fellows, Knights of Pythias or other charitable or social bodies of a like character and purpose, for the establishment and maintenance of places for reading rooms, libraries or social meetings, for establishing boards of trade, chambers of commerce and bodies of like nature

The chapter already requires charitable corporations whose personal property is exempt from taxation, to file annual reports on their finances and other matters with the State Department of Public Welfare The proposed bill would require annual reports from all other organizations incorporated under this chapter or under special acts for similar purposes These reports would contain information regarding finances, activities and various other matters A five dollar filing fee would be required, and there would be penalties if reports were not filed

The bill also gives the Commissioner new powers to inquire into the activities of such organizations It specifies a method whereby, if it is believed that the organization is engaged in activities that are beyond its scope as set forth in its articles of incorporation or that "its continuance is against the public interest," the organization may be enjoined from engaging in such activities, or dissolved

The Boston Chamber of Commerce has given full explanation about the purpose and provisions of the bill and will give further information if requested

The bill has been referred to the Committee on Mercantile Affairs The full text appears on page 123

## BULLETIN OF THE INSTITUTE OF THE HISTORY OF MEDICINE

THE *New England Journal of Medicine* welcomes a new medical journal, the *Bulletin of the Institute of the History of Medicine*, which will be published as Volume 3, No 1, in January, 1935 The first two volumes, the first number of which was issued in January, 1933, were published as a supplement to the *Bulletin of the Johns Hopkins Hospital* This journal, devoted to the history of medicine, will be edited by Professor Henry E. Sigerist The new *Bulletin* will be open to all who have some original contribution to make to the history of medicine These papers will constitute the first section. The second section is planned to be devoted to the publication of old medical texts and documents not previously printed A third section will contain notes and comments, as well as reports on the activities of the Institute Finally, reprints of medical classics will be issued at a low price

This journal, therefore, although reflecting the work done at the Institute, will have a wide interest for all students of medical history.

The first two volumes of the *Bulletin* have contained material on a broad range of subjects and have formed an important addition to medical history in general. Attention may be called particularly to the revised students' check list of texts illustrating the history of medicine by Fielding H. Garrison, a collection of papers celebrating the eightieth birthday of Professor Karl Sudhoff, a revised catalogue of medical and scientific periodicals of the seventeenth and eighteenth centuries, also by Fielding H. Garrison, a paper on the Warrington Academy by John F. Fulton, "The Blindness of Milton" by W. H. Wilmer, and "Dr James Thacher" by Walter E. Steiner. A group of papers of this type, emanating from a single source, speaks well for the activities of the Institute of the History of Medicine and for a high degree of scholarship. One feels that if this new journal maintains this standard it will be of inestimable value to physicians in this country as well as those in the whole English-speaking world.

#### THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

EASTMAN, OLIVER N. M.D. University of Vermont College of Medicine 1908 F.A.C.S. Associate Professor of Obstetrics, University of Vermont College of Medicine. Attending Gynecologist, Mary Fletcher Hospital Consulting Gynecologist, Bishop de Goesbriand Hospital, Burlington, Fanny Allen Hospital Winona. His subject is "Vaginal Hysterectomy" Page 87 Address 163 South Union Street, Burlington, Vermont.

MORSE, ARTHUR H. B.A., M.A. (Hon), M.D. Johns Hopkins University School of Medicine 1906 F.A.C.S. Professor of Obstetrics and Gynecology Yale School of Medicine. Obstetrician and Gynecologist-in-Chief, New Haven Hospital. His subject is "Gynecological Problems of Interest to the Surgeon in General Practice." Page 90 Address New Haven Hospital New Haven, Connecticut.

ALVAREZ, WALTER C. M.D. Cooper Medical College (San Francisco) 1905 F.A.C.P. Head of Section in Division of Medicine, Mayo Clinic. Professor of Medicine, Mayo Foundation. His subject is "What Is Wrong with the Patient Who Feels Tired Weak and Toxic?" Page 96 Address The Mayo Clinic, Rochester, Minn.

DYK, W. J. PAUL. A.B., M.D. Harvard University Medical School 1925 F.A.C.S. President of Staff and Visiting Surgeon at Huggins Hospital Wolfeboro N.H. Vice-President, Carroll County New Hampshire Medical Society

Member House of Delegates, New Hampshire Medical Society Preceptor of Junior Internes from Tufts College Medical School at Huggins Hospital. Board of Governors, New England Obstetrical and Gynecological Society. His subject is "Mesenteric Thrombosis." Page 105 Address Sewall Road, Wolfeboro, New Hampshire

BURWELL, C. SIDNEY A.B., M.D. Harvard University Medical School 1919 Professor of Medicine, Vanderbilt University Medical School. His subject is "The Prevention or Postponement of Death from Heart Failure" Page 108 Address Vanderbilt University Hospital, Nashville, Tennessee

#### MASSACHUSETTS LEGISLATIVE NOTES

##### HOUSE—NO. 12

Accompanying the second recommendation of the Commissioner of Corporations and Taxation (House No. 10)

##### THE COMMONWEALTH OF MASSACHUSETTS In the Year One Thousand Nine Hundred and Thirty Five

##### An Act relative to Corporations for Charitable and Certain Other Purposes

Be it enacted by the Senate and House of Representatives in General Court assembled and by the authority of the same as follows:

Chapter one hundred and eighty of the General Laws as appearing in the Tercentenary edition thereof, is hereby amended by adding at the end thereof the following new sections

Section 30 Every corporation organized or created under this chapter or corresponding provisions of earlier laws or by special act for the same or similar purposes shall annually in the month of January make report in writing in duplicate to the commissioner of corporations and taxation, in such form as he shall prescribe, signed under penalties of perjury by its president, treasurer or other executive officer or officers and setting forth

1. The name of the corporation.
2. The location of its principal office if any.
3. The names and addresses of all its officers directors or other executive or governing boards or committees and the date of which the term of office of each expires.

4. In the case of corporations not required to make report under the provisions of section twelve, its receipts and expenditures for its last financial year the amounts paid to its officers directors, boards committees or membership the aggregate value of its assets, the aggregate amount of its liabilities the value and location of its tangible property real or

personal, within the commonwealth exempt from taxation

5 A brief summary of the nature of its activities during the preceding calendar year

If the commissioner of corporations and taxation shall find the report in proper form he shall, upon payment of a filing fee of five dollars, endorse his approval on one copy of the report, which shall be placed on file with the secretary of state. Failure to file such report within the time prescribed shall subject the corporation, and any officer required to sign the same, to a penalty of twenty five dollars, but the commissioner of corporations and taxation may for cause abate the same, in whole or in part. If any corporation fails for two successive years to file such report, the supreme judicial court, upon application by the commissioner of corporations and taxation after notice and hearing, may decree a dissolution of the corporation. If any corporation fails for five successive years to file such report, the commissioner of corporations and taxation shall, unless he has reason to believe that it is in the public interest to keep the corporation in existence, recommend its dissolution to the general court. Copies of reports made under this section and retained by the commissioner of corporations and taxation may be destroyed at his order at any time after the expiration of five years from the date of filing.

SECTION 31 If from information contained in the report required by section thirty or otherwise derived, the commissioner of corporations and taxation has reason to suspect that any corporation required to make such report is engaging in ultra vires activities he may summons the officers, directors or other executive or governing boards or committees to appear before him, and produce the books and records of the corporation, and submit themselves to examination on oath as to the activities of themselves and the corporation. If after such examination the commissioner of corporations and taxation is of the opinion that the corporation is engaging in ultra vires activities or that its continuance is not in the public interest, he shall report the facts to the attorney general who, if of like opinion, shall bring an information in the supreme judicial court at the relation of the commissioner of corporations and taxation. If, after notice and hearing, the court shall find that the corporation is engaging in ultra vires activities or that its continuance is not in the public interest, it may enjoin such corporation, and its officers, directors, executive or governing bodies or other agents from engaging in such activities, or may decree the dissolution of the corporation, or may make such other order or decree as said court shall deem meet and in the public interest.

#### OTHER BILLS

S 43 An Act providing for Boards of Unemployment Supervisors in Cities and Towns, for the Aid of Aged, Sick and Other Needy Persons and for Unemployment Relief

Section 45 in the new draft is of importance to the sick. The rest of the bill has to do with financial matters not necessarily relating to illness.

H 62 An Act relative to Divulging of Hospital, Dispensary, Laboratory or Morbidity Reports and Records pertaining to Gonorrhea or Syphilis

Section one hundred and nineteen of chapter one hundred and eleven is amended as follows:

SECTION 119 Hospital, dispensary, laboratory and morbidity reports and records pertaining to gonorrhea or syphilis shall not be public records, and the contents thereof shall not be divulged by any person having charge of or access to the same, except upon proper judicial order or to a person whose official duties, in the opinion of the commissioner, entitle him to receive information contained therein. The provisions of this section shall not prevent a physician from informing the husband or wife of a patient with gonorrhea or syphilis of the infection in the patient when in the opinion of the physician that may be necessary to protect said husband or wife or their children. Violations of this section shall for the first offence be punished by a fine of not more than fifty dollars, and for a subsequent offence by a fine of not more than one hundred dollars.

H 235 An Act relative to Fixing the Time when Compensation shall be paid under the Workmen's Compensation Law

Section twenty nine of chapter one hundred and fifty two is hereby amended as follows:

SECTION 29 No compensation shall be paid for any injury which does not incapacitate the employee for a period of at least seven days from earning full wages, but if incapacity extends beyond such period, compensation shall be paid from the day of injury, but except under section thirty five no compensation shall be paid for any period for which any wages were earned. When compensation shall have begun it shall not be discontinued except with the written assent of the employee or the approval of the department or a member thereof, provided, that such compensation shall be paid in accordance with section thirty five if the employee in fact earns wages after the original agreement is filed.

H 234 An Act further defining "Average Weekly Wages" in the Laws relating to Industrial Accidents Chapter one hundred and fifty-two is amended so as to read as follows:

SECTION 1 (1) "Average weekly wages," the earnings of the injured employee during the period of twelve calendar months immediately preceding the date of injury, divided by fifty-two, but if the injured employee lost more than two weeks' time during such period, the earnings for the remainder of such twelve calendar months shall be divided by the number of weeks remaining after the time so lost has been deducted. Where, by reason of the shortness of the time during which the employee has been in the employment of his employer or the nature of terms of the employment it is impracticable

to compute the average weekly wages as above defined regard may be had to the average weekly amount which during the twelve months previous to the injury was being earned by a person in the same grade employed at the same work by the same employer or if there is no person so employed, by a person in the same grade employed in the same class of employment and in the same district. In no case shall the employee's average weekly wages before his injury be computed upon a lower basis than six times the daily wage of the occupation in which he is engaged at the time of his injury.

H 236. An Act providing for Payment of Compensation to Employees Injured in Industrial Accidents during the Entire Period of Total Incapacity

Section thirty four of chapter one hundred and fifty two is amended to read as follows:

Section 34 While the incapacity for work resulting from the injury is total, the insurer shall pay the injured employee a weekly compensation equal to two-thirds of his average weekly wages but not more than eighteen dollars nor less than nine dollars a week except that the weekly compensation of the injured employee shall be equal to his average weekly wages in case such wages are less than nine dollars.

H 248. An Act abolishing the Department of Public Utilities and providing for the Performance of its Duties relative to Smoke Inspection and Abatement by the Department of Public Health.

S 38. An Act relative to the Regulations governing the Sale of Milk

Section fifteen of chapter three hundred and seventy-six of the acts of nineteen hundred and thirty four is hereby amended by striking out paragraph (C)\* as contained in the twenty ninth to forty seventh lines inclusive.

(C) If twenty five per cent of the licensed producers within any market production zone, by petition in writing request the board to establish minimum sale prices for milk for the market or markets within such a ket production zone and if in the judgment of the board, after making such examination and investigation as is authorized by this act or if the producer established under authority of this act or by any agreement, license, regulation or order of the board pursuant to any federal law cannot be maintained, the board may, after a public hearing fix, by official order, minimum wholesale and/or retail prices for milk sold within the market or markets affected irrespective of where such milk is produced. The board may in like manner, but without petition as aforesaid, alter, revise, amend or rescind th prices so fixed. The prices so fixed, altered, revised or amended shall be fair just and reasonable, and shall be given publicity by the board by advertising the same in the principal new paper ad oth wise, in the zone or zones affected.

## MISCELLANY

### THE RETIREMENT OF DR. E. B. LANE

It is with deep regret that the Managers of the Adams Nervine announce the retirement of Dr Ed ward B. Lane from the directorship after more than twenty five years of active service.

Dr Lane has had a very colorful and distinguished career in the field of nervous diseases. His connection for many years with state institutions private practice academic affiliations and association with the Adams Nervine have all made him a very prom-

inent figure in Boston psychiatry during the past half century. He became interested in psychological medicine while a student at Harvard College. It was here that he attracted the attention of William James and it was upon his advice that he decided to enter the field of psychiatry. He entered Harvard Medical School in 1881. An internship at the McLean was followed by a staff position at the old Boston Lunatic Hospital in South Boston, now no longer existent. After three years he joined the staff of the State Hospital at Northampton. In 1889 he returned to Boston to take charge of the Austin Farm. When in 1906 the Austin Farm and Pierce Farm were combined in the establishment of what is now known as the Boston State Hospital he was given the Superintendency. It was in 1909 that he became Resident Physician at the Adams Nervine which position he has held until his recent retirement.

For a number of years Dr Lane was instructor in psychiatry at the Harvard Medical School and for twenty five years was Professor of Mental Diseases at Tufts College Medical School.

Dr Lane is succeeded at the Adams Nervine by Dr J Martin Woodall. Dr Woodall has been associated with Dr Lane at the Nervine for several years. He is a graduate of Harvard Medical School. He received training in general pathology and in neuropathology under Dr F B Mallory at the Boston City Hospital, clinical neurology under Dr Stanley Cobb then of the Boston City Hospital, neurosurgery under Dr Donald Munro of the Boston City Hospital.

Under the new management, the Adams Nervine will doubtless continue to occupy the same high position in the community that it has held under Dr Lane.

BERNARD C. WELD Secretary

### ACADEMY OF PEDIATRICS SYMPOSIUM ON VITAMIN MILK

On December 6 1934 the Massachusetts Branch of the American Academy of Pediatrics held a meeting at Vanderbilt Hall for a round table discussion of the somewhat controversial subject of vitamin D milk. Dr John W M Bunker of the Massachusetts Institute of Technology opened the meeting with the explanatory statement that ordinary milk has a detectable antirachitic potency which can be increased by

- 1 Direct irradiation according to the Steenbock process.
2. The feeding of milking cows with determined amounts of irradiated yeast.
- 3 The addition to milk of a cod liver concentrate according to the Zucker process.

The first two methods are the only ones which concern us particularly in New England.

Irradiated milk can be practically brought to a potency of 50 Steenbock units per quart anything

beyond this potency affecting unfavorably the flavor of the milk. Yeast milk can be brought to a considerably higher degree of potency—160 units or more per quart. Both have been demonstrated to heal and prevent rickets in certain cases.

Following Dr Bunker's explanatory remarks, Dr Henry D Scott of the Wisconsin Alumni Foundation told how Dr Hess and Dr Steenbock had in 1924 simultaneously discovered the method of increasing antirachitic potency by irradiation. Steenbock patented it and turned the patent over to the University of Wisconsin, refusing to benefit personally from it. One of the chief concerns of the Alumni Foundation, administering the patent, is to determine in what ways the method shall be used, having received applications from industries manufacturing all types of products from hot dogs to chewing gum. Mistakes, it is admitted, have been made in granting the rights.

One of the difficulties encountered in evaluating properly the relative merits of these milks, according to Dr Allan Butler, is the present day rarity of rickets in New England. Last winter, in fact, Dr Wyman was able to find only twelve suitable cases on which to conduct a study. Various methods will prevent or cure ordinary rickets, some cases are difficult to cure by any method.

Dr Edwin T Wyman, however, expressed his belief that rickets will be prevented in a greater proportion of cases by milk containing 160 rat units, than by a milk of lesser potency. He also called attention to the confusion in nomenclature of two milks so different in potency and yet so similar in name as vitamin D milk and vitamin D milk irradiated, and suggested that the term vitamin D milk be restricted to the yeast milk.

Dr John Lovett Morse gave as his opinion that most pediatricians and laymen take mild rickets too seriously (an opinion that was probably concurred in by most of those present).

Others taking part in the discussion were Dr Borden S Veeder of St. Louis, Dr Lewis W Hill and Dr Fritz B Talbot. The consensus of opinion was that much remains to be learned about the entire subject.

#### RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR DECEMBER, 1934

##### MONTHLY REPORT FOR DECEMBER, 1934

Disease	Dec, 1934	Nov, 1933	5 Yr Average*
Anterior Poliomyelitis	1	4	13
Chicken Pox	1781	1028	1382
Diphtheria	69	94	275
Dog Bite	643	300	290
Epidemic Cerebrospinal Meningitis	10	4	8
German Measles	328	30	58
Gonorrhea	570	593	555
Lobar Pneumonia	285	740	453

Measles	650	2251	1192
Mumps	242	367	493
Scarlet Fever	648	843	1213
Syphilis	383	372	371
Tuberculosis (Pulmonary)	254	255	301
Tuberculosis (Other Forms)	30	29	36
Typhoid Fever	11	14	23
Undulant Fever	0	1	
Whooping Cough	651	1144	798

\*Based on the figures for the preceding 5 years.

The incidence of diphtheria for 1934 was 40 per cent less than for 1933.

Typhoid fever continued on its downward trend with a reported incidence of 135, a 17 per cent decrease over the 1933 figure of 162.

While the number of reported cases of pulmonary tuberculosis shows an increase for 1934, it is encouraging to note that there was a decrease in deaths.

With 8,393 cases for the year, scarlet fever had its lowest prevalence since 1922.

The incidence of measles since August has been low, but the morbidity for the year was the highest ever reported in this State.

Chicken pox and German measles continue to show an increased prevalence.

Anterior poliomyelitis had a very low reported incidence for the past year.

Whooping cough, although high for the first seven months and for the year as a whole, is running more normal at present.

Lobar pneumonia, mumps, tuberculosis other forms, and epidemic cerebrospinal meningitis show nothing remarkable.

#### RARE DISEASES

*Anterior Poliomyelitis* was reported from Chicopee, 1.

*Dysentery (Amebic)* was reported from Ludlow, 1.

*Dysentery (Bacillary)* was reported from Dedham, 1.

*Encephalitis Lethargica* was reported from Melrose, 1; New Bedford, 1; Quincy, 1; Springfield, 1; total, 4.

*Epidemic Cerebrospinal Meningitis* was reported from Boston, 1; Framingham, 1; Malden, 1; Methuen, 1; Rutland, 1; Somerville, 2; Springfield, 1; Stoneham, 1; Worcester, 1; total, 10.

*Malaria* was reported from Chelsea, 2.

*Septic Sore Throat* was reported from Boston, 2; Greenfield, 2; Milton, 1; total, 5.

*Tetanus* was reported from Attleboro, 1; Chelsea, 1; Saugus, 1; total, 3.

*Trachoma* was reported from Milton, 1; Newton, 1; total, 2.

*Trichinosis* was reported from Boston, 5; Brookline, 2; Dartmouth, 1; North Adams, 1; Springfield, 1; Williamstown, 3; total, 13.

*Typhus* was reported from Boston, 1.

**CORRESPONDENCE****TRANSLATIONS OF *SYPHILIS SIVE MORBUS GALLICUS***

Yale University

The School of Medicine

Affiliated with the New Haven Hospital on the  
Anthony N. Brady Memorial Foundation

333 Cedar Street

Department of Physiology New Haven Connecticut

January 8, 1935

Editor, *New England Journal of Medicine*,

The recent correspondence in your columns concerning English translations of Fracastoro's celebrated poem *Syphilis sive morbus gallicus* prompts us to call attention to the excellent prose version of the poem which has just been published in England, and is soon to be available for distribution in this country through Charles C. Thomas, the medical publisher of Springfield Illinois. The title of the new translation is as follows *Fracastor Syphilis or the French disease A poem in Latin hexameters by Girolamo Fracastoro with a translation notes and appendix by Heneage Wynn-Finch and an introduction by James Johnston Abraham* (London, William Heinemann, Medical Books Ltd., 1934 viii, 254 pp. 5 pl.) This new translation presented with the original Latin text, is the most scholarly and attractive that has yet appeared in English superseding that of Mr Justice Riddell published in Toronto in 1918 (*Hieronymus Fracastorius and his poetical and prose works on syphilis with a full glossary of medical and other terms—By the Honorable William Renwick Riddell* Published by the Canadian Hygiene Council 1918 xii 136 pp.) as well as those mentioned by Dr Brown. It should be pointed out also that Dr Wilmer Cave Wright's excellent translation of *De contagione* does not include the poem *Syphilis* although it contains a full translation and discussion of Fracastoro's later views concerning the disease itself and its treatment.

In March of this year the Yale Press expects to publish our bibliography of Fracastoro's poem *Syphilis* which is mentioned in your review of van Wyck's edition. The bibliography will contain full descriptions of more than a hundred editions of the poem including translations into six languages, seven of which represent independent prose or poetical versions in English.

Yours very truly

LEON BAUMGARTNER, M.D.  
J F FULTON M.D.**COMMENT ON THE REVIEW OF K. OGINO'S  
BOOK "CONCEPTION PERIOD OF WOMEN"**

January 8, 1935

Editor, *New England Journal of Medicine*,

In the current issue of the *Journal* on January 3 your reviewer of the "Conception Period of Women" by K. Ogino makes the statement "In the first place

the method is useful only for women whose menstrual cycles are quite regular. In the following paragraphs of the second edition of this book pp. 65 69 71, 77 paragraphs 4 7 9 and 4 respectively the author makes it quite clear that for irregular cycles all that is necessary is to add the difference in days between the longest and the shortest cycles to the beginning of the eight-day fertile period.

Your reviewer's final advice seems a bit naive in the face of conditions as they are to-day. It is true that carefully controlled series of human statistics to verify the theory would be ideal. But there is no doubt that, judging from the literature, we have here something that is working empirically. Referring to Miller's report of over seven hundred recorded cohabitations in accordance with the theory it is inconceivable that these could have occurred without a single pregnancy resulting, unless the theory were valid as used. On September 8, 1934, the *Journal of the American Medical Association* states editorially "Enough evidence has already been established to indicate that a strict observance of the method is insurance of sterility even beyond that associated with the employment of most of the contraceptive apparatus and medicaments."

Are we to let the "medically sick patients in whom pregnancy would be dangerous or even somewhat harmful to health go without any attempt to aid them until such time as science can make out a water-tight case for the theory? These cases, in fact, are but an insignificant proportion of the total number of people who need this help at the present time. The *American Medical Association Journal* has twice recently called for the large maternity clinics of the country to give this method a thorough trial. In view of all this should we wait for a great deal more carefully controlled evidence from human matings than is at present available?"

Sincerely yours

ROGER E. STEWART, M.D.

50 Bay State Road  
Boston, Mass.**RECENT DEATHS**

**TRACY—EDWARD THOMAS TRACY** M.D. of 50 Hancock Street, Dorchester Mass. died at his home January 12, 1935 after an extended illness. He was born in 1864 graduated from the Harvard Medical School in 1891 and after practicing in South Boston for fifteen years moved to Dorchester.

He joined the Massachusetts Medical Society in 1891 and was also a Fellow of the American Medical Association. He had served as school physician and, after postgraduate work in Vienna, devoted time to the study of epilepsy. He was the author of two books on this subject.

Dr Tracy is survived by a son Joseph V. Tracy a brother the Rev. Joseph Tracy D.D. and a sister Miss Mary R. Tracy.

**KIRKWOOD**—ROBERT J KIRKWOOD, M D, of South Boston, died January 3, 1935, after an acute illness. He was born in South Boston in 1896 where his early education was acquired, later graduating from the Boston Latin School. He graduated in medicine from the Harvard Medical School in 1925.

At the time of the World War he attended the officers' training camp at Plattsburg and after this experience entered the United States Army as a first lieutenant. He served first with the 302nd Infantry at Camp Devens and later twelve months in France.

He was a charter member of the Michael J Perkins post of the American Legion, a member of the Pere Marquette Council, Knights of Columbus, the James M Curley, Jr, Court of Foresters, the South Boston and Boylston Medical Societies, the Lancet and the Aesculapian Clubs.

## OBITUARIES

### DR CURTIS HERMAN JENNINGS

Dr Curtis Herman Jennings, aged 58, pioneer roentgenologist, a leading authority on x ray and electrotherapeutics, died at his home in Fitchburg, Monday, December 31, 1934. He had been a patient sufferer from nephritis for the last four years and that disease finally exacted its toll.

Dr Jennings was born in Brookfield, August 14, 1876 the son of Calvin and Ann Maria (Gilbert) Jennings. His early boyhood was spent in South Dakota, but as a youth he moved with his family to Springfield. He was graduated from the Springfield High School in 1895, and entered the medical school at Western Reserve, Cleveland, Ohio. He left college to enlist in the Spanish American War and served six months as a gunner's mate on the U S S Prairie which participated in the engagement at Santiago. He held an Admiral Sampson Medal in commemoration of that battle.

The war ended, the young medical student was discharged and returned to civilian life. Intent on continuing his studies he enrolled at Baltimore University Medical School and was graduated in 1902. The roentgen ray was then struggling in its infancy, but the combination of mechanics as applied to medical science fascinated the active mind of the student and he specialized in it during his years at Baltimore. Standing well in his classes, he yet found time to play football and the new game of basketball.

Soon after graduation he entered general practice in Boston and practiced for a short time in Portland, Maine. X ray still interested him and he went to New York to study under Dr Lewis Gregory Cole who was the unquestioned head of the new science at that time. He remained there until 1905 when he removed to Fitchburg.

He had charge of roentgenology and the clinical laboratory at Burbank Hospital until a few years ago and was consultant at the Leominster, Henry Hey-

wood, Ayer Community, Elliot Community of Keene, N H, and Peterboro hospitals. For many years he collaborated with Dr A P Mason in the Worcester North Medical laboratories in Fitchburg.

With the outbreak of the World War he enlisted, again in the navy, this time serving as a lieutenant commander, stationed at New London, Conn. He was one of a corps of picked experts, giving excellent service in the field of roentgenology.

Dr Jennings was a member of the American and the New England Roentgen Ray Societies, the Radiological Society of North America, the American Medical Association, the Massachusetts Medical Society, the Springfield Academy of Medicine, the Worcester North District Medical Society and the Phi Chi Medical Fraternity. He was secretary of the Worcester North District Medical Society, for twenty one years, and was also secretary of the Worcester North Cancer Clinic for many years.

He was a member of the Aurora lodge, A. F & A. M., past commander of the American Legion, Fitchburg Post, past surgeon of Camp Guanica, U S W V, a member of the Rotary Club and a former member of the Fay, Alpine and Oak Hill Country Clubs. He was affiliated with Christ Episcopal Church.

He was married thirty one years ago to Ellen Marion Hubbard. He is survived by her, also by two daughters, Mrs Elizabeth Pettus, of Santa Barbara, Calif., and Mrs Pickney H Walker, of Columbus, S C, and a son, Calvin W Jennings.

He leaves a sister, Mrs Myron M Adams, of Southern Pines, N C, and two grandchildren.

Dr Jennings was an outstanding member of the Worcester North District Medical Society. He was a man without veneer and with humility prominent in his make up. The very charm of his personality and his deep culture endeared him to the members of the medical profession and to the entire community in a degree that is rarely achieved.

### RESOLUTION ON THE DEATH OF DR GEORGE C PARCHE

Union Hospital, Inc  
Lynn, Mass

December 8, 1934

Whereas, our friend and associate, Dr George C Parcher, has been removed by death from our company, and

Whereas, we, the Staff of the Union Hospital, of Lynn, keenly feeling our loss, wish to register our appreciation of his kindly qualities, his helping hand to his associates and his patients, his steadfast loyalty to this hospital, the community, and the country, and to tender our sympathy to his family. It is ordered that this resolution be spread upon our minutes and a copy sent to Mrs Parcher.

BUTLER METZGER, M D,  
GEORGE H. MUSSO, M D,  
JOHN L. FAVOLERO, M D, *Secretary*

**NOTICES****RESIGNATION OF HOWARD M CLUTE M.D.**

Dr Howard M Clute announces his resignation from the Lahey Clinic and the opening of his office at 171 Bay State Road, Boston, telephone Commonwealth 1680

**AN INVITATION TO FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY****HARVARD UNIVERSITY MEDICAL SCHOOL COURSES FOR GRADUATES**

A list of activities in the Department of Pediatrics of the Children's Hospital and of the Massachusetts General Hospital to which members of the Massachusetts Medical Society are cordially invited appears below. These exercises are offered without fees as a part of the Courses for Graduates, of the Harvard Medical School, to those who are interested in keeping in touch with Clinical Pediatrics without enrolling in the prescribed courses.

The Children's Hospital and the Infant's Hospital

Clinical-Pathological Conference — Thursdays 12:00 M (Amphitheatre)

Clinic—Medical Surgical and Orthopedic Services—The first Monday in each month 4:00 P.M. (Amphitheatre)

Clinic — Alternating Rounds between Surgical Service, Peter Bent Brigham Hospital (Amphitheatre) and Surgical and Orthopedic Services, Children's Hospital (Amphitheatre) — Thursdays 4:30 P.M.

The Massachusetts General Hospital—The Children's Medical Service

Clinical meeting of the staff—Alternate Fridays 12:00-1:00 P.M. (Ether Dome)

Ward Visit—Tuesdays 2:30-4:00 P.M. (Massachusetts Eye and Ear Infirmary)

Seminar for discussion of recent investigations and literature — Tuesdays 4:00-5:00 P.M. (Pediatric Laboratory)

**MAYNARD LADD M.D.**

In Charge of Courses for Graduates,  
Department of Pediatrics.

**CLINIC AT THE PETER BENT BRIGHAM HOSPITAL**

At 3:30 P.M. on Thursday January 24 in the Amphitheatre of the Peter Bent Brigham Hospital Dr Henry A. Christian Physician in-Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic. To it are cordially invited practitioners and medical students. These clinics will be repeated on Thursdays until May

On Saturdays in the wards of the Peter Bent

Brigham Hospital from 10 to 12 staff rounds will be conducted by Dr Christian. These are open to all physicians.

**EXAMINATION FOR PSYCHIATRIC INTERNSHIPS**

Worcester State Hospital  
Worcester Mass.

Six Psychiatric Internships of twelve months. To begin July 1 1935

A Rotating Service on Medical and Surgical Wards, Male and Female Psychiatric Wards.

Organized instruction in the following courses

- (1) Clinical Psychiatry
- (2) Seminar in Psychoanalysis
- (3) Administrative Psychiatry
- (4) Biopsychiatry
- (5) Juvenile Psychiatry
- (6) Psychiatric Social Service
- (7) Neuropathology
- (8) Fever Therapy
- (9) Endocrines in Psychiatry
- (10) Research Methodology
- (11) Psychometrics in Psychiatry
- (12) Biometrics

Registration before March 1 1935.

Examination date March 15 1935 at 9 A.M. at the hospital.

The hospital provides maintenance.

Graduates (unmarried men) of Class A Medical Schools who have completed an accredited internship in medicine are eligible.

Applications should be addressed to the  
**DIRECTOR OF CLINICAL PSYCHIATRY**

**A PRIZE OF FIFTY DOLLARS FOR CASE REPORTS BY INTERNS IN MASSACHUSETTS HOSPITALS**

The attention of interns in Massachusetts hospitals is called to the fact that a prize of \$50.00 has been offered by the Massachusetts Medical Society for the best written and most comprehensive case report, which may be submitted by one of their number holding any of the rotating internships for the year 1934-1935 in any Massachusetts hospital which is approved for intern training by the American Medical Association.

This report is to be typewritten, and when completed is to be sealed, unsigned in a plain envelope which in turn is to be placed together with a separate slip bearing the name and address of the contestants in a larger envelope and sent to

The Massachusetts Medical Society  
Committee on Medical Education  
and Medical Diplomas,  
8 Fenway  
Boston, Mass.

The contest this year closes May 1 1935 Reports may be submitted at any time prior to that date.

## REPORTS AND NOTICES OF MEETINGS

### FAULKNER HOSPITAL CLINICAL MEETING

On Thursday afternoon, January 3, 1935, the usual clinical meeting was held at the Faulkner Hospital.

A case which was presented at the November meeting as a case of rheumatic fever with rheumatic nodules in the scalp as demonstrated by biopsy came to autopsy during the month of December. Following his presentation in November his condition improved appreciably so that he was out of bed and fever free. Suddenly he developed a terminal infection in the throat with extension into the glandular tissue of the neck. The interesting feature of the case in addition to the terminal infection was the fact that at autopsy there was evidence of both rheumatic fever and periarteritis nodosa. Typical histological findings of both of these conditions were found. It was, therefore, undecided whether some of the typical histological findings of rheumatic fever may be associated with periarteritis nodosa, or whether the findings of periarteritis nodosa may exist as a lesion of rheumatic fever, or whether in this individual both diseases were present. This patient was reported before as having pronounced eosinophilia of unknown etiology. Trichinosis and lymphoid malignancy had been considered. Both of these were ruled out by the autopsy. It is felt that the eosinophilia was associated with either the rheumatic fever or the periarteritis nodosa. In either case an eosinophilia such as this man had is exceedingly unusual.

The other case discussed was that of a man whose prostate had been removed a few weeks before his death in a two-stage operation. Eighteen days after the operation he developed pain in the chest and signs of inflammation in the right lower chest developed. He also was troubled for the last two weeks of his life with hiccoughs. He had a fiery red tongue which had been described as typical of renal insufficiency in prostatic cases and he gradually developed signs suggestive of uremia although his non protein nitrogen was not elevated and he was passing an appreciable amount of urine. There was considerable distention following the operation which could be relieved by appropriate measures. At autopsy an inflammatory condition was found in the chest which was felt to be secondary to an infarct. There was a band of adhesions in his abdomen from some old inflammatory condition which caused a partial obstruction of the lower part of the ileum. This probably accounted for the tendency to distention. Instead of a disturbance in the kidneys, which were practically normal in appearance, there was a marked cirrhosis of the liver which must have existed for some years. It was felt that the symptoms suggesting uremia were due to insufficiency of the liver. It is of interest to note how people can have badly scarred livers without symptoms.

Following the presentation of these two cases Dr John S Hodgson, our neurologist, discussed the rupture of intervertebral discs. He called attention to the fact that the intervertebral discs, especially in the cervical and lumbar regions, are subject to injury by sudden trauma, be it a blow or severe muscular exertion, or by continued slight trauma. The lesion consists in the rupture of the annulus fibrosus which forms the periphery of the intervertebral discs. With a rupture of this a part of the disc protrudes from its normal position or even herniates into the body of the vertebra. These protrusions press on nerve roots or even on the spinal canal and cause symptoms. The chief symptom may be just pain which may be local or may be deferred, or there may be definite neurological symptoms resulting from pressure on nerves. If in the lumbar region, these symptoms simulate sacroiliac disease. If in the cervical region, pain exists often extending down the arm which cannot be accounted for otherwise. It is conceivable that many of the so-called chondromas that have been reported may be ruptured discs. By x-ray study it is sometimes possible to demonstrate a narrowing of the intervertebral space, but the diagnosis is more readily made by means of a combined cistern puncture with a lumbar puncture. In these cases there is evidence of a certain degree of block. The total protein in the spinal fluid is slightly elevated from 40 mgm to 60 or 70 mgm. The use of hipiodol is sometimes helpful in demonstrating the slight degree of blocking in the spinal canal. If the diagnosis is made, operative procedures seem to be the appropriate treatment. A laminectomy is performed. The loose bit of cartilage is removed. Sometimes it is entirely free from attachment, sometimes it is attached to the disc. Dr Hodgson emphasized how small the bits of extravasated cartilage which will give symptoms may be.

In removing the bit of cartilage it is sometimes necessary to open the dura, at other times not. After removal of the cartilage the vertebrae are sometimes fused. The immediate relief from pain and pressure symptoms in these cases is considerable. Just what the final report is going to be, it is perhaps a little too soon to decide. Although apparently a definite pathological entity has been established, it occurs to the writer that, in some of the cases with only pain as a symptom, the possibility of a considerable functional element which so often is benefited by operated procedure must be kept in mind.

### SUFFOLK DISTRICT MEDICAL SOCIETY

A meeting of the Suffolk District Medical Society was held in the Boston Medical Library on November 28, 1934. Dr Roderick Heffron of the State Department of Public Health spoke on "The Massachusetts Pneumonia Program" in substance as follows. Ninety six per cent of cases of acute lobar pneumonia are due to the pneumococcus. Improved

methods of treatment have reduced the death rate of some types of pneumonia greatly. The health department of this state by means of its extensive study has shown that the use of immune horse serum in types I and II give satisfactory results both in the hospital and in the home. It has been found that only types I and II of the thirty two known types are of any epidemiological significance. Twenty per cent of family contacts in types I and II become carriers and this is especially true of those members of the family who are suffering from minor respiratory infections.

The laboratory has developed a concentrated bivalent serum which is twice as strong as that for merly used. Throughout the state there are forty six laboratories equipped with trained technicians to type suspected sputum and to distribute the serum where needed. Some eighty practitioners have aid ed this survey by careful records of their cases and about seven hundred patients have been treated. At the present time any physician can procure serum for the treatment of his pneumonia patients provided that they have been typed and found to be either type I or II and provided that the doctor certifies that they have been ill no longer than ninety six hours.

The results obtained in treated cases in types I and II where the treatment has been instituted before the fourth day have shown that the mortality in type I has been reduced to about one-third of its original value and in type II to around one-half. This is a consistent and long maintained record. The average patient in the past year received sixty eight cubic centimeters of serum and thirty to forty is usually sufficient.

Dr Heffron then showed a series of slides giving the incidence and mortality from the different types treated and untreated. The incidence of type I is thirty three per cent of all cases of pneumonia of type II twenty four per cent type III nine per cent and type IV thirty four per cent. Over eighty per cent of cases of types I and II fall into the age group between ten and forty nine and about seventy five per cent occur in males. A large series of type I treated cases gave a mortality rate of 9.7 per cent as against 24.2 per cent in the untreated. A positive blood culture increased the fatality rate from 4.7 per cent to 20.8 per cent.

In type II, treatment with serum reduced the fatality rate from 40.3 per cent to 23.3 per cent. Likewise in this group those cases with a positive blood culture had a definitely poorer prognosis. Type II is a more severe infection for the young adult with a higher percentage of complications and bacteremia. The fatality rate in the home cases was comparable to that in the hospitals.

By the modern Neufeld method of typing only from five to twenty minutes are needed as against five to eight hours by the previous methods. By adding a drop of immune rabbit serum to a fleck of sputum there will be a pronounced swelling of the capsules

of the cocci if the antiserum is of the same type as the pneumococci. This method is as accurate as those previously used.

The second speaker of the evening Dr Frederick T. Lord discussed "The Diagnosis and Treatment of Lobar Pneumonia." There is a preceding history of acute upper respiratory infection in fifty per cent or more of the cases. The onset of the disease is usually explosive with chill pain in the side, rapid elevation of temperature cough and bloody sputum. Lobar pneumonia may be confused with pulmonary infarction which, however usually follows child birth operation or trauma the temperature rises less abruptly and the sputum is more frankly bloody.

Though the different types of pneumococcus infection cannot be recognized clinically the chances are in favor of type I or II and this chance is increased in male patients between the ages of 20 and 50 with a typical grouping of initial symptoms Lobar pneumonia in children and in the elderly is less likely to be due to type I or II pneumococcus. These two types are seldom the cause of postoperative pneumonia.

In the determination of the type of pneumococcus infection, the sputum is the most satisfactory material to investigate but in the uncommon instances in adults in which sputum cannot be obtained the type of infection can be determined by other means. The specific precipitin test on the urine is usually positive only late in the course of the disease or in severe infections. A blood culture should be taken in every case and typing can be done on positive cultures. Throat cultures may also be used for typing. Dr Lord does not advise the use of lung puncture for diagnosis. When Group IV pneumococci are reported in the sputum the typing should be at once repeated.

Dr Lord stressed the importance of the early use of serum to diminish the mortality and stated that of patients treated in Massachusetts the death rate in those specifically treated during the first three days was 6.8 per cent, on the fourth day 17.4 per cent and thereafter the same as in the untreated cases. The outlook is less favorable with pregnancy septicemia and advancing years.

In discussing the treatment of patients with lobar pneumonia Dr Lord emphasized the importance of an abundant water intake. The posture should be changed frequently to prevent bronchial occlusion and consequent spread of the infection. The intestinal tract should be kept open with a daily enema if necessary to avoid distention which elevates the diaphragm. With anoxemia the oxygen tent is the most satisfactory method of giving oxygen. From forty to sixty per cent oxygen can be maintained in this apparatus and higher concentrations are undesirable. Morphin may be given to control pain or restlessness. Artificial pneumothorax is now under investigation as a therapeutic measure. Vaccines are not likely to be of value by analogy with

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day December 4 Dr William Jason Mixter spoke on "Common Medical Symptoms in Neurological Surgery." The neurosurgeon sees many cases of headache, but brain tumors are an infrequent cause therefore brain tumor is not to be seriously considered without other evidence. The physician must beware of diagnosing periods of unconsciousness as idiopathic epilepsy without a careful study of the patient. The first symptoms of brain tumor may be those associated with hemorrhage into the tumor mass, and Dr Mixter cited cases where this was true. Fainting attacks may be due to a number of causes. One which is being carefully studied is hyperirritability of the carotid sinus in which condition a denervation of this body will relieve the attacks. In a discussion of tumors of the scalp he warned against confusing angiomas with simple wens. The angioma usually is in the midline and pulsates. It may cause uncontrollable bleeding, if an attempt is made to remove it. Osteomata of the skull are often the outward manifestation of a meningioma.

In injuries of the head beware of a subsequent development of increased pressure for the onset of the symptoms of a subdural hematoma is insidious. Patients having received head injuries should be roused at intervals to make certain that they are not becoming comatose.

Backache is a very common symptom usually referred to the surgeon as a last resort. Symptoms of a spinal cord lesion should be searched for and malignancy ruled out. A rare but very fatal condition causing backache is epidural abscess which follows some septic wound furunculosis or upper respiratory infection and which is accompanied by acute generalized symptoms of malaise, high temperature, and leukocytosis as well as backache. Lumbar puncture should not be done, if the diagnosis can be made without it, and early laminectomy is the only cure. Rupture of an intervertebral disc gives a low back ache, and symptoms over a long period of time. After carefully ruling out simple back strain operative removal of the projection will relieve the acute pain which tends to radiate down the leg. The diagnosis of spinal cord tumors is made notoriously late and tumor has many times been confused with acute abdominal conditions. Dr Mixter advised a careful neurological check-up where abdominal pain is of an obscure nature.

In discussion Dr Solomon stressed the symptoms that suggest cord tumor and said that the condition is often confused with multiple sclerosis. In adult life a convolution may be the first sign of a brain tumor. Hysteria may simulate tumor. He cited a case where a traumatic cyst caused convolution with out any localizing signs or spinal fluid abnormality. He demonstrated the x-ray plates of a man who had fallen from a bicycle and fractured his cribriform plate, and thus produced a pneumocephaly.

Dr Bowman said that angioneurotic edema may be confused with brain tumor. Dr Myerson pointed

out that where continued pain is concerned the nervous symptoms should be the first to be considered instead of the last, as is usually the case.

In the general discussion which followed, tuberculosis as a cause of neurological symptoms was mentioned the importance of visual symptoms was stressed and the possibility of neurological symptoms being connected with deficiency diseases brought out. Combined system disease may masquerade as a neoplasm of the cord. Dr Blumgart briefly discussed the carotid sinus tumors where stimulation causes a vasodilation in the peripheral vessels and a slowing of the heart which lead to cerebral anemia. Ephedrin or atropin may control this condition but some cases need operative denervation of the sinus.

Dr Mixter closed with a brief discussion of the relief of tabetic pain. If the pain is low a cordotomy may be effective but many cases become morphine addicts before they reach the surgeon.

#### NEW ENGLAND ROENTGEN RAY SOCIETY

The January meeting of the New England Roentgen Ray Society will be a radiological conference at the Hotel Statler Boston Mass., January 26 and 28 1936

#### FRIDAY MORNING

8:00 A.M.

Registration—Hotel Statler

Massachusetts General Hospital

9:30 A.M. to 12 Noon

Lower Amphitheatre, Out Patient Department

Dr George W. Holmes, Roentgenologist will present the following program

A series of ten minute papers by members of the Staff covering work which is not yet ready for publication

1. The Healing of Fractures of the Skull
2. Some Technical Problems in the Examination of the Gastric Mucosa.
3. Tuberculosis of the Cocum in the Aged.
4. Accurate Measurements of the Living Aorta as Compared with Necropsy Findings
5. Radiographic Procedure in the Operating Room.
6. The Early Diagnosis of Cholesteatoma
7. The Right Middle Lobe in Health and Disease
8. The Management of the Patient with Carcinoma of the Bronchus
9. Ovarian Irradiation in Carcinoma of the Breast.
10. Bone Lesions in Lymphoma.

To be followed by the presentation of some proved cases in which an error in interpretation was made.

Ten (10) minutes will be allowed for the presentation of each paper and five (5) minutes for questions.

Bus from Massachusetts General Hospital to Boston City Hospital.

of the mouth, notable enlargement of the spleen and enlargement of lymph nodes, not readily explainable by adjacent ulceration and infection, all bespeak the diagnosis of acute leukemia. In acute leukemia, especially in adults, the blood smear shows a considerable number of very immature cells, often virtually all the white blood cells are stem cells (blasts) and it is only in the most atypical cases that young forms are few in number. An occasional stem cell may be found in the blood of patients suffering from agranulocytosis. Any very considerable number, however, indicates the probability of leukemia and the more there are the greater the probability. A level is reached, which if more than temporary, almost certainly means leukemia. During convalescence from agranulocytosis there may be, and in fact usually is, a transient outpouring of myelocytes, but this stage is soon passed and clinical improvement is coincidentally evident.

Leukemic patients with temperatures of 102° to 104°F may seem comparatively well. This is rarely the case with agranulocytosis. In this latter disease such temperatures are almost invariably accompanied by marked prostration and symptoms of toxicity. In agranulocytosis the fever is either steady or, more commonly, fluctuates within certain definite, rather narrow limits. In acute leukemia the temperature curve is often an extremely variable one. Afebrile periods are not rare, even at the height of the disease. It must be emphasized again that the total white count is of no vital importance in the diagnosis of leukemia, for leukemia is still leukemia whether the white count be 500 or 50,000 per c mm. The character of the white cells, the concomitant alterations in the red blood cell and platelet picture and the pathological changes in the bone marrow determine the diagnosis and serve, at least in the majority of instances, to mark the one from the other disease. Acute leukemia, furthermore, is the more likely the younger the patient and it is probable that the majority of extreme leukopenias in children are traceable to leukemia or to some serious disorder of the myeloid system other than true agranulocytosis. We have never seen a case of agranulocytosis under the age of twelve years.

The distinction between the two conditions becomes still more difficult when one considers these patients who have had what appears superficially to be agranulocytosis, have recovered, either spontaneously or following some form of therapy, and have later succumbed to classical acute leukemia, proved by autopsy. Some years ago we published<sup>16</sup> a report of the case of a man suffering from marked leukopenia and granulopenia who temporarily recovered following intravenous nucleotide therapy only to succumb to classical leukemia of a fulminating type four months later. The

postmortem sternal bone marrow was characteristic of acute leukemia. It would have been of the greatest interest to know what the bone marrow showed during the initial seizure from which he temporarily recovered. Was this attack true acute leukemia with complete, though temporary, recovery or was it atypical agranulocytosis with the subsequent development of the even more fatal acute leukemia? These questions cannot yet be answered. Since that time we have seen two other similar cases. In each there was extreme leukopenia, moderate anemia, fever, thrombopenia, ulcerations and fever. In each, apparent recovery took place following pentnucleotide therapy, only to be followed by death from obvious and proved acute leukemia some months later. Biogsitter<sup>3</sup> has noted similar cases and he questions whether agranulocytosis and acute leukemia may not be different manifestations of one and the same disease. In the typical case it is not difficult to distinguish agranulocytosis from acute leukemia, but it must be admitted that in many instances the differentiation may be impossible.

It should also be remembered that chronic leukemia of any of the three types may, on rare occasions, become aplastic in the terminal stages. In one instance which came under our observation a classical chronic myelogenous leukemia, proved by sternal puncture, became aplastic in a matter of weeks and died with extreme leukopenia and granulopenia. In this case postmortem examination revealed little or no evidence of leukemic infiltration of any of the organs. Other instances of the same sort have come to our attention. In one (B C H A-32-13) the patient had a white count of 240,000 per c mm and a blood smear characteristic of chronic myelogenous leukemia. Both liver and spleen were grossly enlarged. A month later, shortly before death, his white count had fallen to 1200 per c mm and no granulocytes whatever could be found. At autopsy neither liver nor spleen showed evidence of leukemic infiltration and the bone marrow in many places was completely aplastic. Only here and there could one find small areas of typical leukemic infiltration. The effect of such dilemmas on our diagnostic and therapeutic efforts are obvious.

Those cases showing very low red counts depart more obviously from true agranulocytosis. The lower the red count the less likely the disease is to be true agranulocytosis. With marked anemia, pancytopenia or pernicious anemia with an unusually low white count is the more likely diagnosis, but in certain instances the white cells in the peripheral blood of patients with pancytopenia fall far more rapidly and to a much greater extent than do the other formed elements and if sepsis should ensue one may have, as in one of our cases, a picture closely resembling true agranulocytosis. However, this

condition can be distinguished as a rule from agranulocytosis by the paucity of platelets, the progressive anemia, the presence of at least a few neutrophils in the peripheral blood and the tendency to bleeding from the mucous membranes. Yet, as with aleukemic leukemia, there may arise great difficulties and it is well within the realms of possibility that one disease may shade into the other.

Bearing in mind these diagnostic and nosologic difficulties it does seem, however, that, after discarding the extreme leukopenias secondary to sepsis, aleukemic leukemia, aplastic anemia, pancytopenia and leukopenias of certain metastatic bone tumors, arsenic, gold and benzol poisoning, there remains what for lack of a better term may be called agranulocytosis, agranulocytic angina or idiopathic malignant neutropenia. It is of this condition that we speak. The hematological picture, clinical course and pathological findings probably entitle it to consideration as an entity.

#### ETIOLOGY

The majority of the earlier authors regarded agranulocytosis as a direct result of overwhelming infection (Brogsitter<sup>2</sup>) Yet gradually this point of view has been changing and there would seem to be considerable evidence that sepsis is not the cause, but rather the result of the disease. That such is the case is attested to by the fact that the white count has been found by many authors to be lowered for several days before any clinical signs or symptoms have been manifest. In one patient of ours the white count was 500 per mm. or lower for four days before the appearance of any clinical signs or symptoms whatsoever. On the fifth day the patient had an abrupt rise of temperature to 104°F., chills, headache, prostration and severe sore throat. Bacteria had successfully invaded a defenseless organism. It is difficult to envision an infection so potent as to virtually abolish leukopoiesis without at the same time giving rise to some other outward and visible sign or symptom. It is more logical to assume that the depletion of the available leukocytes renders the organism liable to infection of a most virulent sort. This belief has been frequently expressed<sup>3, 4, 12, 16, 18</sup>. Furthermore, in those instances in which infection appears to be the true cause of the leukopenia, the differential white count and the histological picture in the bone marrow are quite different from that seen in agranulocytosis. One of us<sup>4</sup> formerly expressed the opinion that overwhelming sepsis might, and often did, give the picture of complete agranulocytosis. Further experience has led us to believe that it rarely does so unless there be some underlying bone marrow dyscrasia. In overwhelming sepsis the total peripheral white count may indeed be very low but polymorphonuclear neutrophils usually form a large

percentage of the remaining cells. Myelocytes and young polys are common, even at the height of the leukopenia. In the unusually active bone marrow all stages of myelopoiesis are seen. Such a pathological picture is never seen in agranulocytosis when the disease is at its height. In this condition the neutrophils virtually disappear from the peripheral blood and in the bone marrow no forms more mature than stem cells, or at best promyelocytes are seen unless there has already been blood regeneration and the patient has died of some complication as is occasionally the case. These pathological changes will be referred to in more detail later.

Overwhelming infection can in all probability be discarded as a common cause of true agranulocytosis. That it may be an occasional cause need not be denied.

Allergy has been suggested by Pepper<sup>7</sup> as being of etiological importance in agranulocytosis and we have seen cases develop following the administration of antitoxins and sera of various sorts. But that allergy is of major etiological importance has yet to be shown.

That some endocrine disturbance is the basis for the condition is suggested by the fact that in many instances the onset of the disease occurs at the time of menstruation<sup>19</sup>, and the well known case reported by Thayer and Hansen Prüss<sup>21</sup>, in which attacks occurred regularly for over twenty years at approximately twenty five day intervals, would seem almost certainly to be of glandular origin. It is doubtful however, whether any very large percentage of the cases may be definitely traced to an endocrine disturbance. Thayer's patient appears to be unique and the fact that many female patients suffer from remissions or attacks at the onset of their catamenia does not necessarily lay any very solid foundation for an endocrine etiology of the disease.

The fact that agranulocytosis has increased markedly in recent years, together with the known leukotoxic effect of the benzene ring, makes most tempting the theory that some, if not all, cases are due to the administration of amidopyrine and allied drugs, therapeutic agents which have lately become more and more widely used. Madison and Squier<sup>22</sup> cite fourteen cases of apparently true agranulocytosis in which amidopyrine, alone or with some other drugs, was used in considerable quantities immediately before the onset of the disease. Hoffman Butt and Hickey<sup>23</sup>, Watkins<sup>24</sup> and others have drawn attention to a similar relationship between these drugs and the disease. Seemann<sup>25</sup> however noted that in thirteen of his thirty six cases amidopyrine or its allies had been taken, yet in fifteen there was definitely no history of such therapy. Similarly Jackson<sup>26</sup>, in an analysis of twenty seven of their cases in which complete and unequivocal data relative to medication were

at hand found that in only seven of them could the disease be properly regarded as directly traceable to the administration of these compounds.

There can be no question but that amidopyrine or its allies are of etiological importance, particularly as Madison and Squier<sup>22</sup> have produced with these drugs mild and transient, but definite, granulopenia in patients who had recovered from a classical attack. But there is also no question but that in many other instances there is no such explanation of the cause of the disease. Furthermore, it has been pointed out that the drug may be taken in considerable amounts prior to the onset of the disease yet on careful analysis it may appear that it is of no etiological importance whatsoever. Eight of the twenty-seven cases studied by Jackson<sup>23</sup> had taken amidopyrine or allied compounds in considerable quantities, yet it could be shown in these instances that the therapy had not the slightest causal relation to the actual disease. The "post hoc ergo propter hoc" argument is notoriously fallacious. Andersen's<sup>27</sup> patient took leealgin for one and a half months prior to the onset of granulopenia and the disease might well have been attributed to this compound. Yet recovery took place in spite of an increased dosage of the same drug. That these chemicals are of some etiological importance is undeniable, but they certainly are not the sole cause of the disease. A special report of the Council on Pharmacy and Chemistry of the A. M. A.<sup>28</sup> concludes that there is "no question that amidopyrine is very important in the production of granulocytopenia." The report does not say, nor does it imply, that all cases are due to the drug, nor does it preclude the possibility that there may be some preexisting bone marrow dyscrasia which affords a fulcrum upon which the drug may work.

In a similar manner dinitrophenol has been shown to be the apparent cause of the disease in certain instances (Bohn<sup>29</sup>, Davidson<sup>30</sup>, Dameshek<sup>31</sup>, and Silver<sup>32</sup>). This drug, therefore, must also be regarded as potentially dangerous, even in therapeutic doses.

A familial tendency is rarely seen, yet in our series six patients had very near relations who had recently died of the disease. Chance alone may well account for this.

When all is said and done it must be confessed that the etiology of this disease still remains, in large part at least, obscure. That some cases appear to be caused by the administration of certain chemicals or by the action of certain toxins should not be regarded as indicating that the disease is but a syndrome. Pernicious anemia may be due to lack of an intrinsic factor, to radical surgical interference with the gastro-intestinal tract or to malignant disease preventing the proper functioning of such fac-

tors as cause a proper maturation of the red cells. In a similar manner a variety of agents, known and unknown, may prevent proper maturation of the granular white cells and so produce the disease agranulocytosis.

#### PATHOLOGY

The pathology of the disease is in dispute. Much of this confusion arises from failure on the part of many even to attempt the differentiation, either clinically or pathologically, of the various conditions giving rise to the striking but far from pathognomonic sign, that of extreme granulopenia. Confusion also arises from too great reliance being placed on the interpretation of stained smears taken from the bone marrow. Such smears are of importance in identifying certain cells not easily recognized in sections stained with eosin-methylene-blue. But from smears of the bone marrow one gets absolutely no idea of the number or arrangement of the cells and upon such factors, as well as upon the nature of the individual cells, the diagnosis of any marrow lesion must be based. Custer<sup>33</sup>, and Peabody<sup>34</sup> have expressed the same opinion. Finally, confusion often arises from failure to recognize the normal variations of cellularity from bone to bone in adult life. To pronounce the bone marrow "aplastic" from an examination of the tibia alone is a display of complete ignorance of the normal findings.

Roberts and Kracke<sup>18</sup> say "there is a unanimity of opinion that the essential pathology (of agranulocytosis) is a marked and practically complete hypoplasia of the myelocytic tissues." In one of their cases, sternal puncture (smears) showed a "marrow entirely devoid of granular cells of any type, including even myeloblasts." In the photomicrograph illustrating this feature one would be at a loss to identify any cell. Dodd and Wilkinson<sup>35</sup> state that the bone marrow is aplastic, but it should be pointed out that they describe the marrow of a colored girl of eleven years with hereditary syphilis who after treatment with sulpharsphenamine developed extreme leukopenia. The condition can hardly be regarded as one of true idiopathic agranulocytosis. Schultz, himself, is often quoted as believing the marrow to be aplastic. Yet Leon, who described the marrow in Schultz's cases, merely says<sup>36</sup> that there were neither mature neutrophils nor myelocytes to be found and that the femur was partly red, partly fatty. Such statements cannot be construed as indicating that the author considered the marrow "aplastic." In other instances when the marrow is said to be aplastic, examination of the original source discloses the fact that in the case under consideration the tibia or mid femur only was examined. It is not surprising, therefore, that the histological picture of the disease is regarded as confusing.

Jaffé<sup>17</sup> found a bone marrow rather more cellular than normal with signs of marked degeneration in the granules of the myelocytes. These granules were said to "fuse with the cytoplasm." It would seem that under those circumstances it should be difficult to recognize them as granules, and without at least non specific granules, cells cannot be properly called myelocytes. Jaffé believed the majority of the white cells to be myelocytes with a moderate or considerable number of plasma cells and lymphocytes. Megakaryocytes he found in normal or increased numbers. Fitz Hugh and Krumbhaar<sup>18</sup>, in a most important contribution, postulate a maturation arrest at the stem cell stage with the added possibility of an end stage which might be regarded as aplastic. With this view we entirely agree.

After an examination of the marrow from twenty five cases dying in various stages of what seemed clinically and hematologically to be classical agranulocytosis, it appears that the following generalizations could be made. The marrow of the vertebrae, ribs, sternum and mid femur were essentially the same. The degree of cellularity was usually normal. Rarely the femur remained fatty, as in the normal adult. It would seem that in these instances death occurred too soon for the marrow activity to spread peripherally, although this view cannot be advanced with any enthusiasm. In some sternal and vertebral marrows, particularly in patients dying later in the disease a certain amount of hypoplasia existed. On the other hand in the fulminating cases the marrow was perhaps unusually rich in cells. The degree of cellularity, however, varied but little and is, we believe, an unessential feature of the condition. There was little or no disturbance in the red cell series. Erythroblasts, normoblasts and nucleated red cells occurred in normal or slightly increased numbers and showed no abnormal features. The megakaryocytes also were found in the usual numbers and histologically appeared perfectly normal. With this latter finding, Rotter<sup>19</sup> and Jaffé<sup>17</sup> agree. This is important in view of Roberts and Kracke's opinion that the hemorrhagic tendency which they regard as a very common symptom of the disease may be traced to a "marrow dysfunction involving megakaryocytes and a decrease of platelet formation." We found not the slightest evidence in any of our twenty five cases of such dyscrasia.

The most marked bone marrow changes naturally occurred in the cells of the granular series. No mature granulocytes, either neutrophils or eosinophils, were found in any marrow, nor were there any true myelocytes. Very rarely a promyelocyte was seen. Practically every cell belonging to the granular series was a stem cell. Occasionally, to be sure, the peripheral blood picture had in part recovered and

the patient had died of pulmonary embolus, sepsis or some other complication and in these instances, naturally, myelocytes, meta myelocytes and young neutrophils were found in profusion throughout the bone marrow which was generally hyperplastic, but, in those cases which, at the time of death, showed extreme leukopenia and granulopenia, only stem cells, plasma cells or lymphocytes were found. That this may be construed as a maturation arrest (Fitz-Hugh and Krumbhaar) rather than failure to deliver is evidenced by the fact that the parent cells were often in active mitosis. These stem cells seem to be able to produce their own kind in profusion. Further maturation is denied.

In those patients who survived the ravages of infection for a considerable period (eight to twenty days) the bone marrow picture was somewhat different. It was then found to be relatively hypoplastic. Gradually as the disease progressed the stem cells diminished in number and their place was taken by lymphocytes and plasma cells and in cases dying as late as the fifteenth day after the apparent onset of the disease these cells constituted virtually the only white cells in the marrow. In general Rotter<sup>19</sup> agrees with these findings. This late stage would appear to correspond to the terminal "aplastic" stage postulated by Fitz-Hugh and Krumbhaar<sup>18</sup>. Phagocytic macrophages were at all times present in considerable numbers, particularly in the late stages of the disease. Such cells have also been remarked upon by Lichtenstein<sup>20</sup>. In no case did we note the degenerative changes referred to by Pepper<sup>21</sup> and Oppikofer<sup>22</sup> and so strongly stressed by Jaffé<sup>17</sup>. It is possible that when these changes do occur they are the result of bacterial invasion of the bone marrow itself. It is certain that poorly fixed or improperly stained marrow gives the impression of degeneration. Only by the most careful technic can such be avoided.

It must be recognized that until further work is done we cannot speak dogmatically of the pathology of a disease, the nature of which is still obscure. At present we would agree with Fitz-Hugh and Krumbhaar's view of a maturation arrest with a predominance of lymphocytes and plasma cells in the more advanced cases. A detailed study of these marrows will be published shortly.

#### CLINICAL PICTURE

The classical clinical description of complete agranulocytosis has been repeated so often<sup>23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 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rapid or sudden onset, marked prostration, fever, headache, malaise, chills, sore throat, ulcerative lesions of the oral cavity and gastrointestinal tract and extreme leukopenia and neutropenia, unaccompanied by notable anemia.

Most authorities agree that in the true disease, agranulocytosis, there is little or no material alteration of the red blood cell picture, or any notable diminution of the platelets<sup>1 13 16 39</sup>. It must be recognized that a slight degree of anemia is not uncommon for various reasons in middle-aged or elderly persons and, therefore, may well be an incidental finding in true agranulocytosis. But for the present, at least, it is wise to exclude from this latter category those cases with marked anemia. Marked anemia does not often occur in agranulocytosis, nor does notable thrombocytopenia.

The disease occurs in women far more commonly than it does in men. Hueber<sup>1</sup> found 35 times as many women as men. In Lichtenstein's series<sup>13</sup> there were twenty-four females and three males. In our own series of 103 cases\*, eighty-three were female, twenty were male. These cases were so far as possible limited to such as might properly be called true agranulocytosis. Thus there can be no question but that the female sex is far more often affected than the male.

Agranulocytosis occurs most commonly in mid-adult life. The peak appears to come in the fifties. 29 per cent of our cases occurring in this decade. None of the 103 was under ten years of age and only two were over eighty. Lichtenstein<sup>13</sup>, and Fitz-Hugh and Comroe<sup>7a</sup> found approximately the same age distribution. We cannot agree with Beck<sup>17</sup>, that practically every case occurs between forty-one and fifty-eight.

The white count is rarely as high as 2500 per cu mm and is often 1000 or less. Frequently it is in the hundreds. In this series of 103 cases, thirty had white counts less than 500, twenty-eight had white counts between 500 and 1000, thirty-eight had white counts between 1000 and 2000 and only seven had white counts of between 2000 and 3000. Neutropenia of an extreme grade is the rule. Only seven of our cases showed neutrophils of over 5 per cent at the height of the disease. It is noteworthy that eosinophils are rather consistently absent, not only during the disease but often for months afterwards. This might be taken to argue against an allergic basis for the condition. Such neutrophils as remain are old and often degenerated. The majority of the white cells present are lymphocytes, for the most part of the adult type and showing no noteworthy abnormalities. An occasional young lymphocyte may be seen. The monocytes may, in certain instances, be pres-

ent in abnormally high percentages. Some authorities believe that when this occurs the prognosis is favorable, but there is little evidence to support this view. Rarely a few stem cells may be seen, but never in the quantity that are found in acute leukemia. This very important point has already been referred to.

In our experience and that of Lichtenstein<sup>13</sup>, Kastlin<sup>16</sup>, Schultz and Jacobowitz<sup>42</sup>, Millman and Furculo<sup>43</sup>, and others the platelets are normal during the acute attack and often markedly increased during convalescence. Aubertin and Lévy<sup>6</sup>, find, on the other hand, a constant thrombopenia and Roberts and Kiacke<sup>44</sup> believe that the platelets are markedly reduced. We have seldom seen marked thrombopenia in true idiopathic agranulocytosis and such a finding should, in our opinion, be regarded as an indication that some other disease, notably aplastic anemia or acute leukemia, is under consideration. Only recently a case classical in all ways of agranulocytosis except for marked thrombopenia showed at autopsy classical acute leukemia. Possibly the constant thrombopenia found by Aubertin and Lévy<sup>6</sup> is to be explained by their view that "L'agranulocytose proprement dite n'est qu'un des aspects particuliers d'un syndrome plus général qu'on retrouve isolément, ou en association avec les autres grands syndromes de la pathologie sanguine parmi lesquels il mérite de prendre place." No attempt has apparently been made by these authors to differentiate accurately those varied pathological states characterized by extreme granulopenia. Not all macrocytic anemias are pernicious anemia "proprement dit."

Roberts and Kiacke<sup>44</sup> stress the commonness of bleeding in true agranulocytosis and state that it is "rare to see a case in which there is not some manifestation of the hemorrhagic trend." Most authors point, on the contrary, to the rarity of hemorrhage and with this latter view we heartily concur. Kastlin<sup>16</sup> found hemorrhagic tendency clinically in but eight of his forty-three cases. Lichtenstein<sup>13</sup> regards hemorrhages clinically as extremely rare. Manifest bleeding during life, especially from the mucous membranes, is strong evidence that one is dealing with some form of acute leukemia. This latter disease may occasionally be of such a fulminant nature that death occurs (with coincident sepsis) before definite anemia sets in. It must be remembered that the life of the mature red cell in the peripheral circulation is in the neighborhood of three weeks. Destructive invasion of the marrow with consequent sepsis and death may well occur inside this period.

Jaundice was regarded almost as a sine qua non by Schultz<sup>45</sup>, and Pepper<sup>7</sup> states that it occurs in one half of all cases. Kastlin<sup>16</sup> also

\*These patients were either seen personally or reported in detail by various physicians throughout the country. For the continued co-operation of these physicians we are deeply grateful.

found jaundice in seventeen of thirty two cases Chalier<sup>18</sup> believed jaundice to be common but secondary to infection and Lichtenstein found jaundice in but eight of twenty seven cases. In our own series of 103 cases jaundice was noted in but seventeen instances. From the pathology of the disease there would seem to be no very good reason for supposing jaundice as a natural concomitant of the condition and this symptom, when found, is more properly to be regarded as the result of hemolysis due to secondary bacterial invasion. Indeed it cannot otherwise be adequately explained.

The spleen is but rarely obviously enlarged, never greatly so. Gross enlargement of the spleen bespeaks leukemia.

The ulcerations and gangrenous lesions may be found in almost any part of the body, rarely they may be absent. In our series they were most common, or at least most prominent, in the throat and pharynx, but such lesions are not at all uncommon in the vagina, rectum, skin and gastrointestinal tract<sup>12 29 47 48</sup>. Many cases are admitted under the guise of diphtheria to hospitals for contagious disease (Gordon and Litvak<sup>49</sup>)

Gangrene and consequent sloughing may occur, this is a particularly dangerous event when it occurs in the gastrointestinal tract. Two patients in this series died from rupture of a necrotic intestine. In one the blood picture had already become normal, too late, however, to be of avail.

Owing to the absence of neutrophils there is none of the usual inflammatory reaction about the ulcerations, but a peculiar brawny edema may be most extensive and in the throat constitutes a grave menace to the patient's life. This edema may be so great and so extensive as to preclude the possibility of swallowing and render breathing well nigh impossible.

The fever has nothing characteristic about it. As a general rule the temperature reaches a maximum of 103° or 104°F. Rarely it may rise to 106° or even 107°F. In some patients only a very moderate hyperpyrexia is the rule. A steady, high, unremitting temperature is of extremely grave prognostic import.

#### TREATMENT

The treatment of any disease, the pathogenesis and nature of which is uncertain, is at best unsatisfactory and the more so when that condition may be easily confused with other pathological entities of probably a different fundamental nature. Many measures have been advocated to combat agranulocytosis. None is specific. Almost all authorities agree that the major problem is that of restoring the bone marrow to its normal activity and thus raising the peripheral white count, for the loss of leukocytes removes one of the body's great defenses

against infection. Without bone marrow recovery, there can be no cure.

*Non specific therapy*, such as the injection of sterile milk or turpentine, is conceded by almost everybody to be useless. That one gets a white cell response in normal patients by such therapy is not the slightest reason for supposing that a similar response should occur in agranulocytosis. The probable effect of such treatment in patients with normal bone marrows, is chemotactic, that is the calling forth of such mature and slightly young polys as are already available in the bone marrow and their rapid and efficient replacement. There are no neutrophils in the bone marrow of agranulocytosis patients to call forth.

*Transfusion* of blood has been endorsed by some<sup>1</sup> and without question recoveries have followed one or more such transfusions. Aside from this fact there is not good evidence that blood transfusions have a stimulating effect on the bone marrow or a curative effect in agranulocytosis. Indeed, it is not an uncommon experience to find the peripheral white blood definitely lower after transfusion than before. The number of white cells actually given the patient is small, their life is short, and, furthermore, the patient, as a rule, does not need either plasma or red cells. In our series treated with Pentnucleotide (N N R.), the mortality in those patients receiving transfusions was exactly the same as that of those who did not. In the presence of sepsis when the white count has risen to normal or abnormally high levels, small multiple transfusions may be of value. There seems to be little convincing evidence that they tend permanently to raise the white count or stimulate the marrow.

*Stimulating doses of x-ray* were advocated by Friedemann and Elkeles<sup>51</sup>. They treated forty three patients. Of these, twenty three had either sepsis or pneumonia or died within thirty six hours and all were discarded by the authors in so far as evaluating the effects of treatment was concerned. Of the twenty remaining "cases" there appear to be but seventeen individuals and of these eight died, a mortality of 47 per cent. It should be recorded for the accurate comparison of mortality statistics that in the complete unexpurgated series the mortality was 82 per cent.

Taussig and Schnobelen<sup>52</sup> treated four cases by x ray with a mortality of 50 per cent. Hueber<sup>1</sup> unenthusiastically recommends radiation. Ruzinkoff<sup>53</sup> has expressed the opinion, and it is ours as well that even small doses of x ray tend to depress the marrow and he points out, quite properly, that four or five days must elapse before the effects of any maturant agent can be seen in the peripheral blood. It is usually claimed by those who advocate radiation therapy that hematological changes of a favorable sort were seen in the peripheral blood in a few

hours. When such changes have occurred one is tempted to believe that the rise was spontaneous, or, if actually due to the radiation, was a redistribution phenomenon rather than a genuine stimulation of a dormant or suppressed marrow. Pepper<sup>7</sup> is not enthusiastic about radiation therapy. Lichtenstein<sup>13</sup> treated twenty cases with improvement in seven, but a year later only two were alive, giving a mortality of 90 per cent. Of the cases in our series only three received x-ray (as well as Pentnucleotide). All died. A critical analysis of the results of radiation therapy does not seem to afford any very convincing evidence of its value.

Some students of the problem, notably Roberts and Kracke<sup>18</sup>, believe that "sepsis and necrosis are the great hope of every patient with complete granulopenia". This hope is only too often fulfilled. These same authors, however, say that "with sepsis there is death unless the granulocytes reappear". The implication appears to be that sepsis and necrosis in and by themselves stimulate the bone marrow to regeneration and thus restore the leucocytes to the peripheral circulation. It is difficult to prove that such is not the case, yet it would seem very unlikely. That sepsis raises the white count in individuals possessing a normal marrow is no indication that it will do the same in one whose bone marrow contains, so far as white cells are concerned, only stem cells. Just how sepsis causes leucocytosis and a hyperplastic marrow in normal patients is not clear. There is no evidence, however, that it does so by stimulating the few preexisting stem cells to maturation. The sepsis of agranulocytosis is admitted by all to be the result (not the cause) of the leukopenia. All who have had any wide experience with this disease have seen cases in which the peripheral white count has risen coincidentally with the development of abscesses. It does not follow that the abscess caused the hematological improvement. No one has suggested deliberately giving pyogenic organisms intramuscularly as a therapeutic measure. It is common to see the white count rise coincidentally with the development of the outward and visible signs of sepsis and, if the peripheral blood be carefully followed in these cases, in many instances there will be found a sudden drop of leucocytes as the formation of the abscess begins, to be followed again, in a matter of hours or days, by a prompt rise to the previous or an even higher level. The bacteria have been present all along, but no white cells have been available. "Laudable" pus could not be formed, no "abscess" could develop. The return of bone marrow activity supplies these militant cells and they have been immediately drawn to the site of infection, thus temporarily depleting the supply in the peripheral circulation. Hence the transient fall in peripheral white count. The blood must be followed hour by hour to detect these changes.

Furthermore, agranulocytosis has developed in the presence of preexisting and patent sepsis. Millman and Fuculo's<sup>13</sup> patient "was stricken in her second attack during a time when she was suffering from two abscesses in the gluteal region. This would tend to indicate that in this case, at least, abscess formation which has been advocated as a method of treatment of agranulocytosis was of no benefit". Of the thirty-five cases in our series on which blood cultures were taken, thirty had sterile blood and of these nine died. Five had positive blood cultures and of these three died. The evidence that sepsis and necrosis in cases of agranulocytosis bring about a regeneration of the marrow is not convincing.

*Liver extract* has been advocated by Foran<sup>54</sup>. He injected the "equivalent of 100 grams of liver into the vein or muscle every 8 to 12 hours until a definite rise of total white count—" had taken place. Four cases of apparently true agranulocytosis were successfully treated. Yet Coggeshall's<sup>65</sup> case failed to respond to six vials of liver extract (Lilly 343) intravenously each day. Four of the patients in our series received liver extract as well as Pentnucleotide. All died. It may be argued that insufficient liver was given. The same would apply to the Pentnucleotide. Silver<sup>32</sup> treated a case of agranulocytosis due to dinitrophenol with liver without beneficial results. Bonsdorff<sup>56</sup> treated two cases with liver intravenously with recovery in both instances. There seems to be no reason to doubt, however, but that the first patient was suffering from pernicious anemia. She had a red blood cell count of 528,000 per c mm., a color index of 1.32 and a white count of 1,750. His second patient had extreme leukopenia apparently due to novarsenobenzol and bismuth. The withdrawal of these drugs may well have had as beneficial an effect as the liver extract. Bonsdorff argues that, because the white count rises in pernicious anemia following liver therapy, it should also rise in agranulocytosis. Yet the mechanism of the leukopenia of pernicious anemia is as yet not clear. It may well be that it is similar to that which produces the anemia in leukemia, namely a crowding out of one series of cells by the overgrowth of another. If this be so, liver therapy would raise the white blood cell count in pernicious anemia by an indirect rather than a direct method. At present the ultimate value of liver therapy in agranulocytosis cannot be estimated. It can only be said that a few patients have been successfully treated.

In 1930 Reznikoff<sup>57</sup> advocated the use of adenine sulphate (one of the breakdown products of Pentnucleotide) in the treatment of agranulocytosis and in 1933<sup>58</sup> summarized the results in fifteen cases with eleven recoveries. He also treated eight cases in which the diagnosis was doubtful with but one recovery and twelve cases complicating other diseases with

two recoveries, and these but temporary. His conclusions in so far as pure agranulocytosis were concerned were conservatively optimistic.

In 1924<sup>10</sup> one of us definitely demonstrated the presence of pentose nucleotide in normal human blood. Inasmuch as it had been shown by Doan, Zerfas, Warren and Ames<sup>10</sup> in 1928 that such products could raise the peripheral white count in normal animals, it was decided to try the effect of this substance, presumably a normal metabolite of the intact and healthy organism, in those conditions characterized briefly by extreme leukopenia.

In 1931<sup>11</sup> we reported the results of such therapy in twenty cases of extreme leukopenia or neutropenia with fourteen recoveries. All of these cases might properly be considered as true agranulocytosis or the granulopenia secondary to sepsis. In 1932<sup>12</sup> we reported an analysis of sixty nine cases (including the original twenty). In the total series the mortality was 26 per cent. Since then there have been added thirty four cases, most of which have been under our direct supervision. Only those cases treated for less than forty-eight hours or those which died of some entirely unrelated disease were excluded. Such practice has been common in the compilation of data by other investigators. True complications, of whatever nature, did not, in our opinion constitute valid reason for omitting the case from consideration and analysis. Each patient was counted but once, no matter how many remissions and relapses he may have had. If a patient recovered more than once and subsequently died of the disease, a death was recorded and a death only. All cases have been followed to date. The mortality in this entire group was 33 per cent.

Pentnucleotide (N N R) may be given intramuscularly or intravenously. In the average case of agranulocytosis with a white count between 1000 and 2000 per c.mm., 10 cc. Pentnucleotide are given intramuscularly two or preferably, three times a day until the white count has definitely risen and young neutrophils have appeared. This change usually occurs on or about the fifth day of treatment. Ten cc are then given once a day until the white count has been normal for several days. In cases which are extremely sick and especially in those in which the total white count is below 1000, 40 cc should be given a day until the white count has definitely risen and young neutrophils have appeared. Fifty cc. may be given even more advantageously. The drug may also be administered intravenously well diluted in saline by the continuous drip method, the speed of injection being such that no untoward reactions occur. Usually 50 to 100 drops may be given a minute when 20 cc. Pentnucleotide are diluted in 1000 cc of normal saline solution. The drug should be continued in large

doses until the white count has definitely risen and in somewhat smaller amounts until it has been normal for several days. If there has been no response at the end of ten days, further therapy with Pentnucleotide is useless.

In most patients there are no untoward reactions to the drug. In some there is a transient sense of discomfort at the site of injection. In others there may be precordial distress, dyspnea or nausea. Very rarely are the symptoms alarming. If, however, they are sufficiently severe to upset the patient the individual dose may be reduced and the number of injections per day correspondingly increased. In this manner one can almost always give the required amount each day. It is useless, especially in severe cases, to give small doses. The drug should never be given to a patient with an anaphylactic history, nor to one with severe cardiac damage.

In favorable cases the first signs of improvement following Pentnucleotide therapy are evidenced by the appearance of myelocytes in the blood stream. (Doan<sup>11</sup>) These cells may reach 20 per cent of the total white cells. This change usually occurs on or about the fourth day following treatment and corresponds in certain measure to the reticulocyte rise in pernicious anemia. Shortly thereafter the temperature falls, the total white count rises and more mature neutrophils take the place of the immature cells.

Of the 103 patients treated in this manner sixty nine or 67 per cent, recovered and are still alive. Four additional patients recovered from their initial attack but died in a subsequent relapse. Thus the mortality (38 per cent for the entire series) is considerably lower than that generally accepted for the untreated disease, and considerably lower than that for any comparable series treated by any other measures. Tausig and Schneebelen<sup>13</sup> in 330 collected cases, give the mortality as 76 per cent, and furthermore, they scored a recovery for each and every remission. The corrected mortality in their series would naturally be considerably higher. Brogsitter<sup>1</sup> in 1930 found a mortality of 77 per cent in sixty four cases. Fuld<sup>14</sup> in 1930, noted recovery in but twenty three cases out of 248 a mortality of 91 per cent. Uffenorde<sup>15</sup> found a mortality of 77 per cent in 1934. In 1934 Roberts and Kracke<sup>16</sup> stated, "Complete granulopenia is usually a fatal disease during the first or a later attack", and these authors say that they have not seen any of their recovered cases return to complete health. One of our patients is now a head nurse in a large obstetrical hospital two are active practitioners of medicine and while it is true that convalescence is usually prolonged, yet certainly many cases return to an active normal life without any symptoms of note or any abnormalities in their blood picture. Rosenthal<sup>17</sup> reports ten cases

with five recoveries. It is to be noted, however, that, of these five, two had neutrophils over 20 per cent with total white blood cell counts of 4000 and over, and two more had neutrophils of 10 per cent with white blood cell counts of 1300 and over. The fifth case had 440 white blood cells per cmm with 5 per cent neutrophils. Such hematological findings would at least tend to indicate a good prognosis and it may well be questioned whether such cases should be regarded as instances of true agranulocytosis (Brog-sitter<sup>3</sup>).

Considerable stress, especially from the point of view of prognosis, has been placed upon the occurrence of "mild leukopenias" (Beck<sup>17</sup>, Roberts and Kracke<sup>18, 44</sup>). That such indeed exist need not be denied, but the implications of their recognition have sometimes been more far-reaching than cogent. Roberts and Kracke<sup>18</sup> have found that one in every four patients has a leukopenia and neutropenia. They define leukopenia as a total white blood cell count of below 6000 per cmm and neutropenia as neutrophils below 67 per cent, and they set forth the theory that patients showing such leukopenia and neutropenia suffer more often from exhaustion, nervousness and weakness than do those with normal blood pictures. Yet the percentage of patients in their control group showing exhaustion, nervousness and psychoneurosis is almost identical with the figures of the "leukopenic" group and while twice as many of the granulopenic patients suffered from weakness as did the control group, yet mathematical analysis of these figures shows that such variations might well be attributed to chance alone. The relation of these findings to agranulocytosis is not at the moment clear. As Fitz-Hugh, in a discussion of the paper by Waters and Firor<sup>65</sup>, says, "The — statement about the — finding that one in four persons shows a granulopenia should be accepted with caution. The convalescent leukopenia with relative lymphocytosis and a slight increase of eosinophils is an almost universal finding after the conquering of an acute infection." The granulopenias to which Roberts and Kracke refer are mild in degree. For the moment let it be said that we are not now concerned with patients whose total white count is in the neighborhood of 4000 and whose differential count shows 40 per cent neutrophils, but rather with what for lack of a better term has been called agranulocytosis, a disease characterized by extreme leukopenia and granulopenia. That mild cases of granulopenia exist is not denied. They have not, however, been included in our series of 103 cases. Only seven of these had more than 5 per cent neutrophils, seventy-four had no neutrophils whatever. Only seven had counts of 2000 or over, thirty had counts of 500 or less. It is important to distinguish sharply between those patients who have a white count of 4000

and one who has a white count of 1500. It may still be argued that the higher the white count, the lower the mortality and within certain limits this is true. Among the seven cases which had white counts of 2000 and over, the mortality was 16 per cent, whereas 19 per cent of those whose white counts were 1000 to 2000 died and of those whose counts were below 1000, 55 per cent died. It would seem that when the white count fell below 1000 the mortality was materially increased. Yet even this latter figure is considerably below the accepted figure of 75.85 per cent mortality of the untreated cases of agranulocytosis.

Pentnucleotide (N N R) has been used with apparent success by many<sup>9, 10, 11, 20, 30, 43, 49, 60, 67, 68, 69, 70, 72, 73, 74</sup>

Zia and Forkner<sup>75</sup> have used it with considerable success in cases of agranulocytosis complicating kala azar. They say, "It would appear that the administration of pentose nucleotide or of purine bases offers by far the most satisfactory treatment, not only for agranulocytosis but also for conditions of agranulocytosis the result of pyogenic infection or of chronic benzene poisoning."

Others have had less success<sup>56, 76, 77, 78</sup>. In not all of these cases was the diagnosis true agranulocytosis.

It is impossible at present to evaluate properly the true usefulness of the drug. It appears to be harmless, even over long periods of time. The mortality of those cases treated with it, seems to be definitely lower than that in any comparable series treated by other means. Certain confirmatory evidence is brought forward by the extramedullary myelopoiesis which may be brought about by its injection into animals and the uniformity with which hematological improvement occurs about the fifth day of treatment. The possibility of spontaneous remissions must, however, always be borne in mind and in any individual case cannot be easily dismissed. Patients have received the drug in adequate amounts and recovered, only to relapse again with complete therapeutic failure on the second attempt. Patients have failed to respond to apparently adequate dosage and then recovered spontaneously. But the fact remains that no other therapeutic agent has been shown to be more efficient.

Thus four of the patients in our series who died received, in addition to Pentnucleotide, liver extract and x-ray therapy. Harkins<sup>78</sup>, quoted above as being unenthusiastic about Pentnucleotide, used liver, iron, leucocytic extract, sodium nucleinate, adenine sulphate and guanine with indifferent results. Silver's<sup>32</sup> patient with 20 per cent neutrophils and 10 per cent monocytes died in spite of liver extract therapy. Zinninger's<sup>77</sup> patient, who failed to respond to Pentnucleotide, died two months later, having just "responded" to Addisim.

At present writing it would seem that Pentnucleotide, provided there are no untoward reactions, offers the best chance of recovery in a patient with true agranulocytosis.

It stands to reason that intelligent bedside care, careful nursing adequate nourishment and fluids are all a necessary and obvious part of the treatment. The patient must be protected in so far as possible from infection but to attempt to sterilize the ulcerated lesions by means of antiseptics is fruitless. Such constant therapeutic nudging serves only to keep the patient awake when he should be resting. But frequent washings of the mouth and throat with soothing solutions may allay the pain, reduce the amount of secretion and make the patient in general more comfortable.

It has been suggested (Beck<sup>11</sup>, Roberts and Kracke<sup>12</sup>) that surgical intervention is contraindicated. With this view we heartily disagree. Such surgery should be undertaken as would be advised in a patient with a normal blood. Retrocecal abscesses have been drained (Lantz J Personal Communication), amputations of infected limbs have been effected (Thompson W P., Personal Communication), thoracotomy for empyema has been done, ischiorectal abscesses have been opened and a cervical cellulitis has been drained, in all cases rapid recovery has ensued. In one instance death was apparently due to lack of proper surgical intervention after the blood picture had become normal. There is no reason why surgical measures should not be instituted, provided they are clearly indicated, as they would be in other patients. An operation of election should, of course be avoided.

It is certain that all drugs containing a benzene ring should be immediately and completely omitted. Madison and Squier<sup>13</sup> found 100 per cent mortality in their six cases which continued to take amidopyrine or its allies. Of the eight patients in our series who continued to take the drug during their attack, seven received Pentnucleotide treatment and six lived, but it should be pointed out that in only three of these instances was the benzene derivative regarded as causative. Two of these three patients received Pentnucleotide treatment and recovered completely. The third was not so treated and died. It would still appear to be the wiser course, however, to omit any such drugs as amidopyrine or its allies.

In certain instances, edema of the throat may be so great that deglutition and even respiration may be difficult or impossible. Tracheotomy may be tried in such instances but in our experience it has been of no avail.

#### CONCLUSIONS

1. Whether agranulocytosis is to be regarded as a disease entity or a syndrome cannot as yet

be dogmatically stated, but it is probable that such a disease entity does exist.

2. The etiology of the condition must, for the present, remain uncertain. Amidopyrine and its allies, however, may and probably do have much to do with the development of certain cases.

3. The pathological changes in the bone marrow of agranulocytosis consist of a maturation arrest at the stem cell stage. Later in the course of the disease plasma cells and lymphocytes replace, to a large extent, the previously existing stem cells.

4. Careful asepsis, adequate nursing and intelligent general care of the patient are obviously essential and important parts of the treatment.

5. Pentnucleotide (N N R.) intramuscularly or intravenously offers, at the present time, the best method of stimulating the bone marrow to recovery and the results following this therapy have been more satisfactory than those after any other type of treatment.

6. Until the nature, etiology and pathology of agranulocytosis is unequivocally placed upon a sound basis, the diagnosis, treatment and prognosis of the condition must remain *sub judice*.

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### OVERCROWDING AND THE SPREAD OF DISEASE

Overcrowding is a prime characteristic of slum areas. The inhabitants have little money for rent and must, as a rule, live in quarters that do not fit the size of the family. This is especially true to-day, because of the doubling-up of families. We must distinguish between congestion in sleeping quarters, in the individual house or flat as a whole, in the hills used by several families, in the yards, or playgrounds, in the streets, in public buildings. It is recognized that "the maximum opportunity for the spread of infection will occur when a center of close aggregation is associated with marked dispersal." Thus it is regarded that the manifest excess of contact diseases in slum areas is due not so much to overcrowding in the individual flat or house as to the general congestion of the area—congregation of young children in the hallways of tenements and in the streets, etc. The problem is therefore a broad one, and it is evident that similar chances for the spread of infection occur throughout a crowded American city, in the subways, theaters, schools, etc.

Diseases which are passed from one to another on account of close personal contact are numerous, including the common cold, sore throat, bronchitis, influenza, diphtheria, scarlet fever, mumps, chicken pox, whooping cough, cerebrospinal fever, measles, and even pneumonia and tuberculosis. Although numerous means of conveyance are factors, these diseases are spread primarily by secretions from the mouth and nose through droplet infection.

Analysis of 3,200 deaths of infants under 1 year in a number of countries showed a higher proportion of deaths from infectious diseases where the housing was bad. Good housing, 34.7 per cent, moderately good, 40.4 bad, 45.9. It did not appear that this difference could be entirely due to "social status," since a corresponding tabulation by social status showed Good, 33.9, moderately good, 40.6, and bad, 39.6.

In the case of the common communicable diseases of children (measles, diphtheria, scarlet fever,

whooping cough), there is recognized to be an excess mortality in overcrowded districts of cities. The reason for this higher mortality would appear to lie in the lower age incidence, since these diseases are more fatal (i.e., have a higher case fatality), in the very young ages.

It would not be possible to refer to any proportion of studies made on the relation between density and mortality, from William Farr down to the present time. Interpretation of them is complicated by the difficulty of ascertaining what the real causal factors are, but the evidence is unmistakable that congestion and overcrowding do in themselves cause the spread of disease. Their effect in the past on the prevalence of such epidemic diseases as plague, smallpox, cholera, typhus fever, and influenza is almost beyond belief, but the point is to be made that such conditions cause a real menace in the slum areas at the present time. To-day, with our knowledge of the methods of spread of communicable disease, the continuation of such a menace is a severe criticism of our civilization. It should be added that in all programs of slum clearance or re-housing there must be a definite plan to prevent the development of equally hazardous conditions in other districts.

Communicable diseases endemic to slum areas are likely to be carried into other parts of the population. That has been a striking phenomenon in the past, especially in connection with those vast epidemics of smallpox, plague, cholera, and typhus fever in which so many millions of lives were lost. That the danger is not one of the remote past is shown in the epidemic of typhus fever and relapsing fever in Russia from 1919 to 1923. In 1920 about 5,500,000 cases were reported in European Russia and the Ukraine, while 13,000,000 were reported for the period 1919 to 1923.

Even in the United States to-day, no individual can feel that his personal health can be maintained independently of the public health status of the population generally or of that of the less privileged groups—United States Public Health Service.

## NEW ENGLAND SURGICAL SOCIETY

## BLEEDING GASTRIC ULCER\*

BY GEORGE ALBERT MOORE, M.D.†

GASTRIC hemorrhage of the less severe types in which there is a gradual loss of blood or a small amount of acute bleeding is quite generally treated conservatively.

Massive gastric hemorrhage either in repeated attacks or continued bleeding under medical treatment is a grave emergency, frequently demanding surgical intervention. Gastric bleeding, varying from a slight stain to massive hemorrhage occurs in many diseases such as cirrhosis of the liver, splenic anemia, biliary diseases, chronic appendicitis, portal thrombosis, acute dilatation of the stomach, brain tumors and several others. A local lesion from which the hemorrhage originated, is seldom demonstrated except in diseases causing esophageal varices. Our interest in these patients after recovery from the acute symptoms is in the differential diagnosis and the method of treatment which will prevent a recurrence.

A rare type of gastric hemorrhage of which little is known regarding the pathogenesis presents a difficult problem in treatment. The typical case occurs in an apparently healthy young woman without preceding gastric disturbance, although it may occur in older women and in men. In some patients a history of insignificant gastric symptoms is obtained, possibly slight bleeding for a few days or weeks before the acute hemorrhage. A small number result from an acute infection, others are thought to be of toxic or anaphylactic origin. Laboratory and x-ray studies are negative. Gastroscopic examination has proved of considerable value in some cases as reported by Clerf<sup>1</sup> and Benedict<sup>2</sup>. Bortz<sup>3</sup> classifies these disorders as 1. Diffuse gastric hemorrhage from physical or emotional strain. 2. Profuse hemorrhage from superficial defects in the mucosa, Dieulafoy's ulcer and Linhorn's disease. 3. Hemorrhage from pore-like openings in one of the gastric vessels. 4. Hemorrhage from multiple minute erosions. 5. Capillary oozing. 6. Hemorrhagic gastralgia.

The onset of acute bleeding is sudden, with hematemesis or melena, followed by faintness, collapse and the other usual signs of hemorrhage and shock. Many of these patients recover under conservative treatment after one or more attacks, others have repeated attacks with a fatal result, a small number are saved by surgery. Absolute rest in bed with sufficient morphine,

withholding food and liquids by mouth and an icebag to the epigastrium are indicated in all cases. Glucose and saline intravenously and stimulants of any kind are contraindicated as they raise the blood pressure and tend to promote hemorrhage. Fluids should be administered by rectum and by hypodermoclysis. Various hemostatic drugs and serums too numerous to mention, atropine, alkalies, and the Jutte and Levine tube for lavage have been used. All are of questionable value, some are decidedly harmful. Blood transfusion probably has been used more frequently than any other method of treatment. Small amounts, i.e. 250 cc., are usually given to avoid raising blood pressure, though 500 cc. is advised in some clinics.

The unsatisfactory results of surgery in these cases are apparent from the various types of operative procedure reported. At operation and autopsy in many patients no lesion of the gastric mucosa is found after prolonged search. In others, minute or superficial lesions are found involving too much of the gastric wall to treat locally. Surgery is rarely advised until life is despaired of. As a result, the condition of many patients is so critical when medical treatment is abandoned that only the simplest type of operation can be considered. Finney<sup>4</sup> advised gastrotomy and thorough search for the source of bleeding. Walton<sup>5</sup>, occlusion of the pylorus and gastroenterostomy without search for the bleeding vessel. Cuneo<sup>6</sup>, gastrotomy and ligation, cauterization or electrocoagulation of the bleeding points, citing Cazin's twenty five cases with twenty three recoveries and Kraft's five cases with four recoveries. Sénèque<sup>7</sup> and Mallet-Guy and Peycelon<sup>8</sup>, ligation of "different pedicles" of the stomach when no ulcer is found. Tixier and Clavel<sup>9</sup> reported two recoveries of very critical cases after jejunostomy. Local treatment of the bleeding points or superficial ulcers, if present is apparently of some benefit. When no lesion is found ligation of gastric vessels or jejunostomy may be of value. On the whole, surgery, the last resort in these cases, saves but few.

A high percentage of all gastric hemorrhages are due to chronic ulcer. Miller<sup>10</sup> reviewed 151 cases at the Hospital of the University of Pennsylvania and found that 62 per cent were due to ulcer. Rivers<sup>11</sup> reported that 90 per cent of the cases of hematemesis at the Mayo Clinic were due to intragastric lesions. Statistics from many writers are irrelevant as gastric and duodenal

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hemorrhages are not differentiated. Bleeding occurs in about 25 per cent of chronic ulcers. Balfour<sup>12</sup>, Truesdale<sup>13</sup> and Bock<sup>14</sup> have reported cases of diaphragmatic hernia resulting in gastric ulcer with hemorrhage. A small number of gastric hemorrhages are due to malignancy. Balfour reported 75 per cent, Miller 22 per cent and Finsterer<sup>15</sup> 3 per cent.

Symptoms of acute bleeding from a chronic ulcer do not differ from acute gastric hemorrhage from other causes except in rupture of large vessels as the coronary, splenic, etc. In these cases the blood loss is extremely rapid and often fatal. Conservative treatment is of little benefit and the only hope lies in early operation.

A high percentage of bleeding chronic ulcers are controlled by conservative treatment. A small number recover completely. Persistent ulcer symptoms after cessation of a hemorrhage require surgical treatment, but operation should be withheld until considerable improvement is noted in the patient's condition, preferably a few months.

Hinton<sup>16</sup> reported a mortality of 11 per cent in 80 cases of severe gastric and duodenal hemorrhage treated medically. Chiesman<sup>17</sup> 25 per cent in 191 cases, Ross<sup>18</sup> 58 per cent in 45 cases and Lynch<sup>19</sup> 12.9 per cent in 31 cases. The number of gastric ulcers in these reports is not stated. Finney gives the mortality from bleeding ulcer as 29.5 per cent. It is evident that there is an opportunity for considerable improvement in the medical management of these cases.

Continued or repeated bleeding from a gastric ulcer under medical treatment is an indication for surgical intervention. How many attacks of bleeding and how long the bleeding shall be allowed to continue are matters of individual judgment. An estimate of the amount of blood lost in the vomitus and stools may be very misleading. The red cell count is a more accurate index of the patient's condition. A steady fall in the red cells to below two million with repeated or continued hemorrhage is an indication for immediate surgical intervention. If medical treatment has been prolonged with repeated transfusions the surgical risk is increased as the mortality increases with each hemorrhage and the benefit from transfusion decreases.

Balfour advises operation if a second hemorrhage occurs before the patient has recovered from the initial attack. Choyce<sup>20</sup> recommends operation in all cases of chronic ulcer "as soon after the cessation of the first bleeding as their condition will permit." In cases of continued bleeding after absolute rest he advises immediate operation. Finsterer reported 42 cases operated after the initial acute hemorrhage with a mortality of 48 per cent and cited Friedman's report of 1927 consisting of 18 early operations

with one death. The severity of the hemorrhage in Finsterer's cases may be questioned as he mentioned the use of transfusion in few patients. His operative procedure in most cases was ligation of the bleeding vessel or excision of the ulcer.

Hypnotics, external heat and other means to combat shock are advised preoperatively in all cases. The benefit derived from saline, glucose and transfusion will depend upon the patient's condition and the duration and amount of preceding medical treatment.

The first attempt to treat massive gastric hemorrhage surgically was by von Eiselsberg<sup>21</sup> in 1880. A resection with the thermocautery of an ulcer on the lesser curvature was done with a fatal result. The first successful operation was by van Kleef<sup>22</sup> in 1882. Roux and Mikulicz<sup>23</sup> in 1897 reported one successful case and three fatalities following operation for acute hemorrhage. Mayo-Robson<sup>24</sup> reported 69 per cent mortality in 1900 following surgical treatment of 12 cases, Hartmann<sup>25</sup> 62 per cent mortality in 1903 and Tuffier<sup>26</sup> 37 per cent mortality in 42 cases in 1905. Little improvement in surgical treatment has been made in recent years.

Any surgical treatment should be the simplest possible to obtain hemostasis (Pfeiffer<sup>27</sup>). In the non-adherent chronic ulcer, mass suture, cautery puncture and infolding the ulcer or ligation of tributary vessels in large ulcers are effective and productive of little shock. Adherent ulcers are a more difficult problem, often requiring separation of adhesions and excision or mass suture of the ulcer with ligation of bleeding vessels in the pancreas. A less difficult approach in some instances is through a gastrostomy incision. Radical methods are indicated in the less severe cases as excision of the ulcer with gastroenterostomy or the various types of resections.

The following series of 116 cases has been seen in my private practice:

Duodenal Ulcer	Perforated 93	Hemorrhage 25	Mas- sive 9	Death 5
Gastric Ulcer	Perforated 23	Hemorrhage 3	Mas- sive 10	Death 1

The cases of duodenal ulcer are included to show the relative frequency of the two lesions about four duodenal to one gastric. Hemorrhage occurred in a higher percentage of cases in gastric ulcers than in duodenal, ten gastric to nine duodenal. There were five cases of massive duodenal hemorrhage, all of which were treated conservatively and died. Four patients with gastric ulcer had massive bleeding, two were treated conservatively with one death and two operated upon successfully.

CASE 1 November 10, 1925, E. S., male, aged fifty. Always well except for attacks of "biliousness and sour stomach" for many years. Yesterday afternoon

while at work, he suddenly vomited a large amount of blood and fainted. He was carried home, put to bed and given morphine and a hypodermoclysis. This morning he vomited about one and a half quarts of dark blood. He was seen at his home with Dr Baker of Middleboro in the late afternoon. He was pale, blood pressure 40 hemoglobin 30 per cent. Abdomen moderately distended. A transfusion of 500 cc. was done at once. The following afternoon he vomited about one pint of bright blood and the next morning November 12 vomited fully a quart of blood. His condition was extremely grave when he was seen at 6 P.M., semi-conscious with imperceptible pulse and blood pressure. A second transfusion of 500 cc. was done. The following day his condition was greatly improved, but in the afternoon he vomited a pint of blood. A third transfusion of 500 cc. was given. He had no more bleeding after this transfusion and made an uninterrupted recovery with no recurrence to date. X rays one year after the hemorrhage showed an irregularity of the lesser curvature suggestive of healed ulcer.

**Case 2** January 24 1929 W C, male aged seventy-four. Referred by Dr Record of Abington. Had many attacks of severe epigastric pain with slight hematemesis and dark stools for five years. Attacks preceded by heavy drinking. For the past two days he has vomited bright blood frequently "about a cupful at a time" and has passed many tarry stools. He was semiconscious on admission extremely pale, pulse rapid and thready, with imperceptible blood pressure. Red count 1500 000 hemoglobin 25 per cent. He was given shock treatment and preparations were made for transfusion but he died before any blood was given him.

**Case 3** January 1, 1931 W P, aged thirty-eight. Referred by Dr Baker of Middleboro Mass. History of ten years "stomach trouble" which necessitated giving up work for the past two months. Operation cauterized puncture and infolding duodenal ulcer posterior gastroenterostomy. Relieved for five years, then in 1926 had recurrence of symptoms. X rays at that time showed a perforating ulcer of the lesser curvature of the stomach. Not heard from until May 2 1931 when he was admitted to the Moore Hospital with the following history: his stomach symptoms have gradually increased in the past six years in spite of treatment. During the past six days has passed four dark bloody stools and last night vomited a large amount of blood and again at 4 A.M. and 12 noon to-day. He was moderately pale. Systolic pressure 80 hemoglobin 50 red count 2500 000. A transfusion was done of 500 cc. May 6 he said he felt very weak and passed two large dark movements. May 9 he seemed worse and passed more dark stools. A second transfusion of 500 cc. was given. May 10 he vomited over a quart of bright blood. A transfusion was done at once. Immediately after he was operated upon under ether. A large bleeding ulcer was found on the lesser curvature which was cauterized (puncture) and infolded with mass sutures. He had no further bleeding and made a slow but satisfactory recovery. He has been quite free from stomach symptoms since 1931 until a few weeks ago. Since then he has had a recurrence of epigastric pain and indigestion.

**Case 4** May 31 1931 F C, female aged fifty-nine. Referred by Dr Elliott of Middleboro Mass. Had indigestion and occasional attacks of vomiting for past fifteen years. Has noticed dark colored movements the past four weeks and has lost strength and color rapidly. Eight days ago vomited twice, very dark vomitus. She was extremely pale and very weak. Hemoglobin 30 per cent red count

2,000 000 moderate epigastric tenderness. X rays of the stomach showed a probable gastric polyp. June 4 transfusion of 500 cc. She passed several tarry stools and on June 13 her hemoglobin was 40 per cent and red count 1500 000. June 14, she was given 500 cc. of blood. June 15 operation under avertin and ether. An indurated ulcer 3½ cm. was found in the posterior wall of the stomach adherent to the pancreas. A 3½ inch incision was made in the anterior wall of the stomach, the ulcer was separated from the pancreas and excised. The opening in the posterior wall of the stomach was closed transversely. Convalescence was uneventful and she has remained well since.

#### CONCLUSIONS

The mortality of gastric and duodenal hemorrhage from all causes is said to be from 3 to 5 per cent. Statistics of gastric hemorrhage alone are not available in the literature.

I have emphasized the importance of recurrent and continued massive hemorrhage, as the mortality under medical treatment is reported as high as 58 per cent and of the patients operated upon much higher.

Massive gastric hemorrhage occurs in a small number of patients without an ulcer history and without visible evidence of a ruptured vessel. Surgery is not advised in these cases while expectant methods offer any hope, as the operative mortality is discouraging.

A high percentage of gastric hemorrhages, however, are due to chronic ulcer. It would appear that earlier operation in these cases might result in a lower mortality.

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## DISCUSSION

DR. WALTER C SEELYE, Worcester, Mass *Mr President and Gentlemen of the Society*—Dr Moore has brought his subject before you in a complete and interesting manner, and has covered the ground so well that it leaves very little to discuss

I want to reiterate his point that apparently he is dealing with gastric bleeding ulcers and not duodenal bleeding ulcers. As Morgan has pointed out, the massive gastric bleeding ulcers usually occur from small and acute ulcers, and these acute ulcers are usually multiple, as has been demonstrated in autopsy, even only a millimeter or two in diameter.

These ulcers are found to have a ruptured artery at the base, and being almost always multiple, could with great difficulty be found in a trans gastric operation.

Chronic ulcers may also bleed, to any degree, from slight to massive hemorrhages. Chronic ulcers obtain fibroses, and those on the lesser curvature show that the large arteries of the stomach at some distance from the ulcer are drawn into the base of the ulcer by massive fibrosis, and it is in that type of chronic ulcer that we get the bleeding of any considerable amount. When dealing with massive hemorrhage of the stomach, we are faced with a condition requiring utmost judgment in regard to treatment which may be medical or surgical according to the situation at hand.

Medical treatment, Dr Moore has shown you very clearly, and when that fails, there are cases that have to be operated upon which, if found to be the type of chronic ulcer, with induration, offer much more likelihood of controlling the hemorrhage than small multiple, acute ulcers which so often occur.

In the latter they cannot be observed from the examination of the outside of the stomach, and I feel that it is futile to open the stomach in any attempt to find a bleeding point, but the chronic ulcer, with induration, can always be found by examination of the stomach, and cautery puncture by the Balfour method does lend a very important means of controlling the hemorrhage, for in all probability that ulcer alone is the seat of the hemorrhage.

In cases of bleeding from multiple, small, acute ulcers if desperate, and medical treatment fails, I feel that the only possibility of cure is a quick gastroenterostomy. That is the operation of choice rather than trying to find the bleeding point by opening the stomach.

DR ARTHUR W ALLEN, Boston, Mass Some of you will remember that I reported before this Society two years ago a group of duodenal ulcers with massive bleeding. We found that about one third of duodenal ulcers bleed, and that 0.3 per cent of all bleeding duodenal ulcers died of hemorrhage, and that 14.5 per cent of those who bled massively died of hemorrhage. Also, that in this group most of the deaths occurred in patients over fifty years of age.

We have recently studied the gastric ulcer records in relation to bleeding and mortality for a ten year period. Four hundred and thirty four gastric ulcers

were treated as hospital patients during this time. One hundred and twelve of these cases bled. Six died of hemorrhage, or 5.3 per cent of the bleeding gastric ulcer cases bled fatally.

In going over these records, we chanced across two cases of cancer of the stomach, one of gastritis, one gastric polyp and a gastrojejunular ulcer ending fatally from hemorrhage.

Most of us, I believe, agree that operation during the acute stage of hemorrhage is a serious undertaking. I feel, however, that in massive hemorrhage from duodenal ulcer in patients near middle life, we must be prepared to do radical surgery in the acute stage if there is indication that spontaneous cessation is unlikely. A method of attack was described by Dr Benedict and me in the Annals of Surgery, October, 1933. I wish to reiterate here that this should be done only on rare occasions and in properly selected cases.

I wish to congratulate Dr Moore on his presentation and commend him for his willingness to attack massive gastric hemorrhage early in proper cases. I do not believe that the age question is so relevant in the gastric ulcer as in the duodenal, but am not prepared to make a definite statement concerning this to-day. I am impressed by the fact that we should be radical in gastric ulcer bleeding more often than in duodenal.

We should not wait until these patients are *in extremis* before resorting to surgery. Many of them will live several days and die of a final hemorrhage, even after repeated transfusions. They are depleted from starvation as well as blood loss and are easy subjects for pulmonary complications and infection. We must select the cases for radical surgery in the first forty eight hours. If a patient bleeds out one transfusion carefully and slowly given, he should be taken to the operating room, given a massive transfusion or two and radically operated upon.

In the gastric ulcer group, I advocate opening the stomach as Dr Moore has demonstrated, evacuating the clots and treating the ulcer from within. The actual bleeding vessel can be seen from within and then ligated on the outer side of the stomach in most cases. A gastroenterostomy as Dr Seelye has suggested, should be added if the patient's condition permits. I wish to warn against simple gastroenterostomy in massive hemorrhage either from gastric or duodenal ulcer. If these patients are the type that should have emergency surgery, they will continue to bleed after simple gastroenterostomy.

DR GEORGE A MOORE, Brockton, Mass The type of operation would appear to deserve emphasis in these cases of massive gastric hemorrhage, as they are extremely grave surgical risks. The operation should be planned to fit the individual case. Some temporary method of hemostasis, as mass suture of the ulcer or ligation of tributary vessels, is as extensive an operation as their condition will permit. Excision of the ulcer or gastroenterostomy, should be withheld until the patient recovers from the hemorrhage.

## TYPICAL EPILEPTIC SEIZURES IN THE COURSE OF SCHIZOPHRENIA\*

### A Report of Two Cases

BY EDWARD F. FALSEY, B.S.<sup>†</sup>

SINCE the appearance of Notkin's review<sup>1</sup> in 1929, in which he presented five cases, there have been a few scattered reports of patients in which various admixtures of epileptic and schizophrenic syndromes have been described. The rarity of such combinations has been constantly emphasized, and in the majority of the cases reported, the epileptic attacks either preceded or initiated the psychosis diagnosed as schizophrenia. Thus in Notkin's five cases, the first had epileptic seizures prior to the development of his psychosis, the second presented a history of convulsions in childhood, the third had a series of fainting attacks probably petit mal in character, which were not complicated by the schizophrenic picture until the patient was thirty seven years of age. In the fourth case however, an epileptic convolution appeared eight years after admission to the hospital at the height of the psychosis, schizophrenia of the paranoid type. There is in Notkin's fifth case a definite history of head trauma in childhood and when the two convulsions occurred in this patient, he presented the clinical picture of manic-depressive psychosis, manic phase, rather than of schizophrenia.

In the case of R. K., reported by Krapf<sup>2</sup> in 1928, the convolution described is probably directly attributed to the hyperventilation which occurred during the catatonic state, and is thus to be considered tetanic rather than epileptic in character.

Rosenthal<sup>3</sup> in 1920, stated that he had never seen a classical epileptic attack in catatonia and had found no description of one in the preceding literature.

Gruulke<sup>4</sup>, in a review in 1924, said that he had never seen a fully developed motor attack of the major type in schizophrenia. Penacchi from the Psychiatric Hospital in Perugia reported three cases in which epilepsy and schizophrenia were associated and stated that in the instances in which the epileptic attacks precede the schizophrenic picture, the latter may properly be regarded as an epileptic psychosis, although it may closely simulate schizophrenia. The other cases in which schizophrenia precedes the epileptic attacks he considers extremely rare. He expresses the belief that in either instance one must look for a 'peculiar constitutional con-

dition of the subcortical as well as cortical centers'

Glaus<sup>5</sup> presented eight cases in which a double diagnosis of schizophrenia and epilepsy was made, but pointed out that in four of these a purely successive combination was involved in which epileptic attacks had made their appearance many years before the onset of the psychosis. Even in the acute catatonic exacerbations of the later schizophrenia, there resulted in his cases no tendency to produce further attacks. Of his other four cases in which schizophrenia and epilepsy occurred together, there was but one in which he believed a causal relation existed between the catatonic state and an epileptic seizure. He concluded that schizophrenia has on the whole really unimportant pathogenic significance in the release of epileptic attacks or in the production of epileptic equivalents. The epileptiform attacks in the course of catatonia, occasionally observed, Glaus regarded as catatonic symptoms or as exogenous reaction forms which are simply symptomatic and have nothing to do with epilepsy in the narrower sense. He stresses the fact that in none of the schizophrenia-epilepsy syndromes can an epileptic family background be demonstrated.

The two cases presented herein are both instances of young individuals in which arteriosclerotic and luetic factors may be definitely ruled out as possible etiological factors in the pathogenesis of the seizures. In each instance, the seizures described were typically epileptic and occurred for the first time during a catatonic exacerbation of a rather long standing schizophrenia. In neither instance have the seizures recurred since the acute catatonic phase of the psychosis has subsided. In one case there was a mild infection (nasopharyngitis) and a mild elevation of non protein nitrogen (14.4 mgm./100 cc) during the period of epileptic manifestations. It would appear in the following that the epileptic seizures described were either released by the catatonic episodes or were the result of the same etiological factors involved in the exacerbation of the psychosis. Thus they appear to be a reflection of deep-seated vegetative metabolic, or psychobiological changes which not only were concomitant with the psychosis but which so lowered the convulsive threshold that epilepsy appeared.

\*From the State Hospital for Mental Diseases, II Ward, R. I. Acknowledgment is made to the staff of the State Hospital especially to Doctor Yooyee, Kasanin, Ping and Summers, from whose progress notes and impressions the writer draws freely in the description of the clinical course and diagnosis of the cases presented.

<sup>†</sup>Falsey Edward F.—Junior Interns Rhode Island State Hospital for Mental Diseases June-September 1937. For record and address of author see "This Week's Issue," page 161.

CASE 1 (R. I. State Hospital for Mental Diseases No 18400)

J. B., a single white woman of Scottish descent, twenty-four years of age was transferred to the State Hospital from the Charles V Chapin Hospital

on July 24, 1934 because she had been acting peculiarly and had been noisy "and assaultive." Her family history was negative for outspoken nervous and mental disease. The patient's father was a stern, harsh man; her mother a nervous, nagging woman, who kept the family under control by continual complaining and weeping. At the onset of the patient's present illness, the family group consisted of her father, mother, and one brother, twenty two years of age.

The patient was born in a village in Scotland on September 29, 1909. Birth and early development were normal. The patient was described by her brother as a "perfect child", who never got into difficulty at home or at school. The patient came to this country at thirteen years of age and attended high school for two years. She was a good scholar but was required to leave school at the end of that time to assist her mother with the housework. She secured an occasional odd job and attended night school where she finished a commercial course. After graduating she obtained employment as clerk in a bank and was fairly successful, her earnings rising to \$21.00 per week after three years there. The patient had always been healthy and had had no operations, accidents, or serious illnesses until the onset of the conditions for which she was admitted. Careful questioning of two informants (patient's mother and brother), revealed no history of head trauma and at no time did the patient exhibit convulsive phenomena in childhood. Menstruation began at fourteen and was regular. The patient did not use alcohol or tobacco. She was considered a good natured girl and was rather athletically inclined. She was active in church work and liked to dance. All her earnings were turned over to her mother who purchased the patient's clothes, which were old fashioned and which made the patient feel conspicuous in her social group. The patient's mother was extremely domineering and seldom permitted her to leave the home in her search for amusement.

The patient's mental illness began early in January 1931, when for a week she complained of feeling blue and depressed. She was unable to work and sat staring into space, occasionally expressing the belief that people were against her and that they were calling her a "bad girl". She was admitted to the Charles V Chapin Hospital and transferred from there to Butler Hospital on February 14, 1931. She expressed delusions of persecution, was suspicious and evasive and at one time attempted suicide. On March 14, 1931, the patient became very active, screaming wildly and tearing madly about the ward. She was resistive and had to be spoon fed, but grew quieter during the following two months and was able to leave the hospital on July 31, 1931. Diagnosis on discharge from Butler was manic depressive psychosis, manic phase.

Following her discharge from the hospital the patient was subjected to even closer parental supervision. Until June of this year, the patient was submissive and made only occasional attempts to find employment. For a week she worked as substitute clerk in a hat shop and two or three months in the summer of 1932 she was a clerk in a drug store. During the spring of 1934 she took up gardening as a hobby.

Early in June, 1934 the patient became anxious to obtain work and finally located a position as waitress at a sea shore resort which necessitated her living away from home. Her mother was very actively opposed to this move and wept copiously, but the patient finally broke with her and left her home. Five days after beginning work the girl's actions became manifestly abnormal. She rose at 4 o'clock in the morning and went into the fields

to pick flowers. Her conversation became rambling and disconnected and she grew noisy and as saultive when she was brought home. On June 20, 1934 she was admitted to Charles V Chapin Hospital where she was hyperactive and resistive, was obviously hallucinated and had to be tube-fed. In two weeks there, she became denudative and incontinent and at times would stretch herself on the floor in the attitude of the crucifixion. Diagnosis of schizophrenia was established and the patient transferred to the State Hospital for Mental Diseases at Howard, R. I., on July 24, 1934.

During the first few days in the State Hospital the patient was quite retarded and displayed hesitancy, bewilderment, withdrawal, and preoccupation. She had during the first three days of her residence three seizures which were typically epileptic in character. Each lasted three to five minutes and was first manifested by the patient losing consciousness and falling to the floor. Each time the musculature of her extremities went first into tonic spasm and then exhibited the typical clonic contractions. The muscles of mastication were likewise involved in these contractions and she lacerated her tongue severely. Her eyes were rolled upward during the seizures and flecks of foam appeared on her lips. The patient fell asleep after each seizure and her consciousness was clouded for several hours. Luminal was started immediately and she was free of convulsions by July 27. On that day she became extremely disturbed, moving restlessly about, singing and slapping herself. She grew quiet after being placed in continuous baths for a brief period, and since then her clinical picture has been characterized by her assumption of numerous unusual postures and by various contortions of her body. At times she has been flaccid, limp, and almost lifeless in appearance. She has not had any seizures since July 27, although luminal was discontinued on August 17.

At psychiatric examination on July 27 the patient was disoriented for time and place, but her answers to questions were coherent and relevant at that time. She was, however, quite preoccupied and her apperceptive powers were impaired by the concentration of her mental effort on the subject of her orientation. She denied auditory and visual hallucination, but exhibited an incomplete amnesia for the events which preceded her admission to the hospital. She made no attempt at confabulation and seemed somewhat dazed. Her judgment was very poor, but she showed partial insight by recognizing that she was in an abnormal mental state. Physical examinations on July 24 and 25 were negative. Laboratory examinations were negative except for a leucocytosis of 18,400 on July 25, which by August 2 had fallen to 8,200.

At a staff conference on August 17, the patient's emotional reactions were quite inadequate and rigid, and it was frequently not possible to secure any answer to questions directed to her. Diagnosis of schizophrenia was made and her general reaction was considered by Dr. Noyes to be "certainly not dissimilar to a catatonic excitement". The convulsions described above were considered incidental phenomena in the general vegetative and metabolic derangement accompanying her acute and deep-seated psychosis.

CASE 2 (R. I. State Hospital for Mental Diseases No. 18,444)

F. G., a twenty-one year old married Italian woman, was first admitted to the R. I. State Hospital for Mental Diseases on August 28, 1931 being transferred from Providence City Hospital where she had been negativistic, mute, and untidy, and where she had to be tube-fed.

The patient had one brother admitted to the State

Hospital in 1925 whose condition was diagnosed as schizophrenia otherwise there was no history of nervous or mental disease, or of alcoholism. The patient was born June 20 1913 was the youngest of three siblings, and as a child was considered "stubborn." She started school at eight years of age and completed the eighth grade at fifteen. She then assisted in the housework at her home. She was quiet and apparently happy although very self-contained. She had always been quite religious.

Her sister had noted an increasing instability and nervousness in the patient beginning in 1929. In July of 1931 an appendectomy was performed on the patient, and following her discharge from the hospital she had become depressed and refused to eat or talk at home. She had accordingly been admitted to the Providence City Hospital where her condition was as described above and where the diagnosis of dementia praecox catatonic form, had been established. Under hydro and occupational therapy the patient's condition gradually improved after her transfer to the State Hospital and she was paroled in November of 1931. She had considerable difficulty in making adjustment outside the hospital. In March, 1932 she contracted a Neisserian infection. The patient was returned on three occasions until finally paroled against advice in May 1933. After that date she obtained work and became engaged to be married. The patient then exhibited no abnormalities of behavior until the day before her wedding. On June 25 1934 she cried most of the day. She insisted at the last moment that she be married with a high mass although other arrangements had already been completed. On the morning of her wedding she complained of a sore throat. Sexual adjustment was satisfactory but on the night of June 28 she screamed and told her husband that her brother was observing them through the door. Two days after this episode she appeared to be unable to arrange dishes properly on the table. She talked incoherently about her father and mother and about a brother who had died when she was five years old. The following day while she was accompanying a friend on a city street, a clock struck the noon hour and the patient knelt suddenly and began to pray loudly crossing herself and calling upon the saints. She was brought to Providence and admitted to the Charles V Chapin Hospital on July 11. There she was elated, restless and uncooperative and before her transfer became delusional and incontinent. It was necessary to tube-feed her until her entrance into the State Hospital on August 23 1934.

During that day she remained mute but was fairly cooperative to physical examination. On August 24 she had the first of a series of typical epileptic seizures. On the twenty fifth she was observed in two of these each lasting approximately three minutes and spaced at intervals of three minutes. In the first, she bit her tongue rather severely and the musculature of her extremities went first into a tonic state and then into clonus. On the twenty sixth she had six seizures each one being followed by a clouded state. In spite of anti-convulsive treatment her seizures of the grand mal type continued to occur frequently until August 29 when their

character apparently changed to a petit mal type. She had for the following four days, numerous attacks of the petit mal character but since September 2, 1934 has been totally free of seizures. During psychiatric examination on September 4 1934 the patient's predominant attitude was one of apathy and she was obviously disinterested in the interview. She was preoccupied and at times hallucinated in the visual field. Her orientation for place was accurate and her powers of apperception not fundamentally impaired. Her emotional reactions were superficial and her emotional responsiveness inadequate. There was obvious scattering and at some points, blocking in her stream of thought. Her ideational content was characterized by a considerable burden of guilt. She had apparently regressed considerably and her judgment was extremely poor. She had no insight into her condition.

Physical examination on August 23 revealed the following positive findings (1) nasopharyngitis (2) hyperactive deep tendon reflexes and (3) B.P. 142/90 leucocyte count on August 23 was 11,550 on the twenty-eighth it was 10,200. Wassermann and Kahn were negative. N.P.N. on August 27 was 44.4 mgm. per 100 cc. on September 7 N.P.N. was 21.3 mgm. per 100 cc. X-ray of the skull was negative.

Neurological examination on August 29 revealed bilateral equivocal Babinski reactions and questionable ankle clonus. On September 9 Babinski response was flexor and ankle clonus definitely absent. Diagnosis established at staff conference on September 10 1934 was schizophrenia with epilepsy.

#### SUMMARY

1 The rarity of typical epileptic seizures in schizophrenia is constantly emphasized in the literature.

2 Two cases are presented in which young schizophrenic individuals at the height of a catatonic exacerbation of their psychosis exhibited, for the first time, typical epileptic seizures of the grand mal type.

3 The etiology of these attacks is attributed to profound vegetative, metabolic, or psychobiological changes concomitant with the catatonic states.

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## PRIMARY CARCINOMA OF THE VAGINA\*

BY JOHN T WILLIAMS, M.D.†

**P**RIMARY carcinoma of the vagina is extremely rare Ewing<sup>1</sup> quotes Schwartz that it constitutes 0.24 per cent of all carcinomata, and Williams to the effect that only 0.43 per cent of all cancers in women have their origin in the vagina. Primary carcinoma of the vagina must not be confused with secondary carcinoma, the result of extension from the cervix, which is extremely common, or the occasional implantation metastases from an adenocarcinoma of the corpus uteri.

The percentages quoted by Ewing, small as they are, seem to me to be unduly high, for in a search of the records of the Pathological Department of the Boston City Hospital, I could find only two undoubted specimens of primary carcinoma of the vagina recorded during a period of twenty-five years, 1906 to 1930 inclusive. One of these was my own personal case to be described in some detail.

Moench<sup>2</sup> of the Mayo Clinic has analyzed fifty-nine cases observed between the years 1904 and 1930. Her paper includes cases previously reported by Broders<sup>3</sup> and Stacy<sup>4</sup>. According to Moench the relation of primary cervical to primary vaginal carcinoma is forty-three to one, which certainly overstates the frequency of primary carcinoma of the vagina in common experience.

Graves<sup>5</sup>, Anspach<sup>6</sup>, Lynch<sup>7</sup>, and others in textbooks mention the existence of primary carcinoma of the vagina, but do not cite cases. Bailey and Bagg<sup>8</sup>, Tuft<sup>9</sup>, Holland<sup>10</sup>, Singer<sup>11</sup> and Moench<sup>2</sup> have reported cases in more or less detail.

Healy<sup>11</sup> in a recent paper reports *en bloc* ninety-nine cases of vaginal carcinoma. It seems improbable that these could have been all primary in the vagina, even in a clinic the size of that at the Memorial Hospital.

Histologically all primary carcinomata of the vagina are epidermoid in type and derived from the squamous epithelium of the vagina. Although Broders<sup>3</sup> believes that adenocarcinoma may develop from the basal layer of the pavement epithelium, the occasional reports of adenocarcinoma of the vagina should be looked on with suspicion as probable implantation metastases from a growth primary in the corpus.

The most common location is on the posterior vaginal wall (Lynch<sup>7</sup>, Graves<sup>5</sup>, Moench<sup>2</sup>). Practically all writers agree that irritation from a pessary is not a predisposing factor. Previous childbearing is also of doubtful etiological significance. The Mayo series<sup>3</sup>, which is the only

detailed one on record, showed in an analysis of forty-one patients with primary carcinoma of the vagina, thirty-six married and five single women, and of the married women 17 per cent had not borne children, which after some mathematical computation, makes the proportion of presumable nulliparae about 27 per cent.

The symptoms are identical with those of cancer of the cervix, thin watery discharge becoming blood-stained, with intermittent periods of free bleeding. The diagnosis is easily made on vaginal palpation and inspection, but should be confirmed by biopsy.

The following cases are reported in some detail as the only two undoubted instances of primary vaginal carcinoma admitted to a busy gynecological service in a period of twenty-five years.

**CASE 1** Miss S. M., aged fifty, single, a cook by occupation, was admitted to the Boston City Hospital Jan 26, 1915, with the following history. The menopause had occurred without incident sixteen years before. For some months she had suffered from a foul, yellow vaginal discharge, but had not sought treatment until she developed a severe dysuria.

General examination showed a senile appearing cachectic woman. No marked pathology in the chest or abdomen was found. Local examination revealed a firm, ulcerated mass involving the anterior vaginal wall just above the introitus and obviously infiltrating also the bladder wall. Biopsy showed epidermoid carcinoma originating in the vaginal epithelium. The cervix was intact and the uterus of small size.

This case was inoperable and was simply given terminal care, dying from cachexia five weeks after admission.

**CASE 2** Mrs. H. W., aged seventy-two, a widow, no occupation, was admitted to the Boston City Hospital May 7, 1930. Her past history was as follows. She had had four normal labors and no miscarriages, an appendectomy in 1899, but no other important illnesses. The menopause had occurred in 1908 without incident. Five weeks before admission she had had a slight staining and three weeks later a profuse vaginal flow followed by more staining.

General examination showed an elderly woman apparently in fair condition, although a slight cardiac irregularity and a blood pressure of 180/120 were noted.

Local examination revealed a cauliflower-like growth, 1 and  $\frac{1}{2}$  inches in diameter at its base, located one inch from the cervix and slightly to the left on the posterior vaginal wall. The cervix itself, although prolapsed to the introitus, was not ulcerated or eroded. There were moderate cystocele and rectocele.

It was decided to perform a biopsy and treat the growth with radium at the same sitting.

On May 8 an attempt was made to excise a portion of the neoplasm for microscopic examination, but owing to excessive bleeding it was necessary to remove the entire growth in order to control hemorrhage. Following excision 100 mgm of radium bromide screened in 2 mm brass and enclosed

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in rubber tubing was placed against the site of removal and left for twenty hours (2000 mgm. hours of radiation).

Dr Mallory examined the specimen personally and reported epidermoid carcinoma. He also made a microphotograph of the growth, which I am able to reproduce with this article.



The patient had very little reaction and the wound healed quickly. I have had the opportunity of following this patient to date. The vagina remained clear for nearly three years when a slight recurrence was noted. On May 8 1933 three years to a day from her operation and first radiation, she was again radiated this time being given 2100 mgm. hours by the same technique.

The recurrence quickly disappeared and examination one year later (May 14 1934) showed the vagina well cicatrized at the area of radiation. No ulceration, induration or infiltration could be found.

Treatment of primary carcinoma of the vagina should be by radiation. The accessibility of the growth and the probability of early extension to contiguous organs combine to make the application of radium the choice over any method of excision. The radium application should be followed by deep x ray therapy at a later date.

The prognosis is poor however in the majority of cases Bailey and Bagg<sup>1</sup> treated eighteen cases by a combination of needling and vaginal tubes held in place in dental compound. Only four patients were free from recurrence at the end of two years.

In Moench's series<sup>2</sup>, of fifty three cases in which the end results were known only 17 per cent could be considered as cured. Similarly Healy<sup>11</sup> reported only 12 per cent of five year cures.

These poor results are undoubtedly the result of early invasion of contiguous organs.

#### CONCLUSIONS

1 Primary carcinoma of the vagina is rare but easy of diagnosis.

2 The symptoms are identical with those of cancer of the cervix, the diagnosis resting on inspection and biopsy.

3 Because of easy accessibility the application of radium is simple.

4 Because of the early extension to contiguous organs and tissues, excision is contraindicated as the first choice as a method of treatment.

5 Radium treatment should be followed by high voltage x ray exposures.

6 The prognosis is poor, about 25 per cent being free from recurrence at the end of two years and only from 12 to 17 per cent at the end of five years.

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Since this article was submitted for publication a third case of primary carcinoma of the vagina has been admitted to the Gynaecological Ward of the Boston City Hospital. This patient entered on Oct 24 1934. She was sixty years of age, the menopause had occurred eleven years previously. For two months she had suffered from intermittent vaginal bleeding.

Examination showed a polypoid growth arising from the anterior vaginal wall, bleeding slightly on touch. On October 27 this growth was excised with a wide base. The pathologist reported it a slowly growing well differentiated, epidermoid carcinoma. Following excision 1500 mgm. hours treatment with radium element was given.

The patient left the hospital on November 3 with the site of excision well healed. It is, of course too early to give a definite prognosis in this case.

## VERMONT STATE MEDICAL SOCIETY

GENERAL CONSIDERATIONS AND PRINCIPLES OF  
EXCRETION UROGRAPHY\*

BY M SWICK, M.D.†

**E**XCRETORY urography is the roentgenologic visualization of the urinary tract by the intravenous, oral, subcutaneous or rectal administration of substances that are radiopaque. These should be non-toxic and excreted by the kidney in high concentration. The substances thus far proved successful are the various crystalline stably-bound organic iodides known as Iopax, Skiodan, Neoskiodan and finally, Hippuran. The lantern slides which are presented have been obtained for the greatest part with a compound known as Hippuran, introduced by the author in 1933. The latter medium in distinction to the others, is the iodine derivative of a compound normally excreted by the kidney and representative of a product of metabolism. Chemically, Hippuran is the sodium salt of ortho-iodohippuric acid. It is non-toxic and excreted unchanged. Satisfactory uograms have been obtained with Hippuran by the intravenous, subcutaneous and oral routes.

**GENERAL CONSIDERATIONS** Excretory urography has proved itself an invaluable aid in urologic diagnosis. However, like every other method, it is not without its limitations. The early enthusiasm of some, that cystoscopy, ureteral catheterization and retrograde pyelography would become of minor importance has proved itself unfounded. These various procedures must supplement one another, and where doubt exists, cystoscopy and retrograde pyelography should be carried out. The direct visualization of the urinary bladder and catheterization of the ureters are still irreplaceable in the urologic armamentarium.

Since excretion urography depends for its success upon the functional activity of the kidney parenchyma, one should constantly be aware of the renal and extrarenal factors that determine the net result in that functional activity, for only in this manner can one properly interpret and evaluate the anatomic results obtained. The normally functioning kidney possesses the ability to excrete substances in high concentration in a given short period, this may be characterized as the "thrust-excretion ability of the normally functioning kidney", 70 to 80 per cent of Hippuran, for example, being excreted within the first two hours. It is upon this concentrating property of the kidney that the success of

excretory urography depends. As a corollary, where this concentrating power is either impaired or absent, as in the poorly functioning kidney, the roentgenologic visualization is correspondingly poor or entirely absent. Broadly speaking then, it may be stated that the degree of visualization depends upon renal and extrarenal factors determining renal excretion.

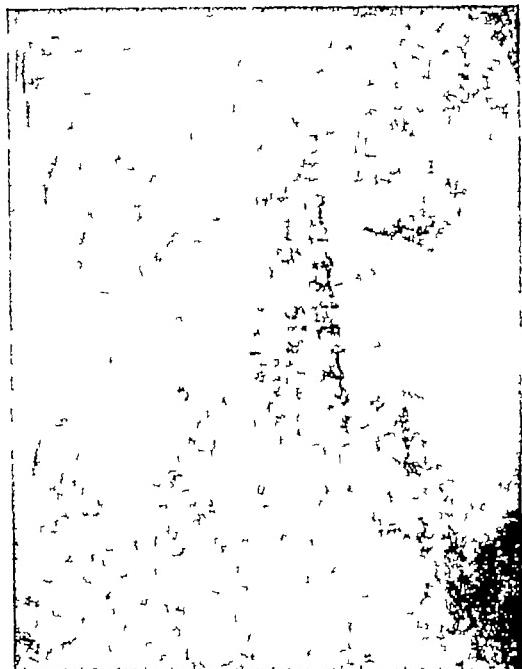


FIGURE 1. Intravenous urogram—Right hydronephrosis due to aberrant vessel at the uretero pelvic junction demonstrating the intense visualization that may be observed in cases of hydronephrosis and that therefore the intensity of roentgenologic shadow is not a quantitative measure of the healthy functioning renal tissue. The slight dilatation on the opposite side is indicative of a ureteral stone overlying the sacrum.

However, in the presence of urinary tract obstruction, visualization may still take place in those cases where the level of excretion normally required for roentgenologic purposes is impaired, provided that renal excretion still exists. Thus, in hydronephrosis, good visualization may still be encountered in spite of the existence of relatively little intact functioning renal tissue. An important concept to be derived from case illustrations bearing upon this consideration is the following, that in cases of hydronephrosis, the intensity of roentgenologic shadow cannot be relied upon as a quantitative measure of healthy functioning renal tissue or one for determining the type of therapeutic procedure. The latter will depend upon the individual case and upon the operative findings.

\*Read at the Annual Meeting of the Vermont State Medical Society at Burlington, October 4-5 1934.

†Swick, M.—For record and address of author see "This Week's Issue" page 168

Again, the functional activity of the kidney may be temporarily diminished or perhaps totally inhibited as a result of either occluding lesions or trauma, although the kidney parenchyma itself be intact. The matter of total functional inhibition in the presence of intact renal tissue may be open to question and difficult of proof when considered in the light of experimental work. Yet for practical purposes, the concept of temporary functional inhibition may be permitted in cases where non visualization of the urinary tract at one examination has been followed by the restoration of function with the removal of the causative factor. Such experiences have been observed in one case following trauma from retrograde pyelography and in another from a high occluding stone. Therefore, one should not always conclude that the kidney parenchyma is permanently damaged beyond repair because of the non visualization at one examination.

In addition, instances of poor or no visualization, either bilateral or unilateral, in the presence of normal renal function as determined by excretion of indigo carmine, have been noted. These failures are difficult to explain. Perhaps, in some, the origin may be faulty technique. For one thing, I consider the application of compression by means of an air inflated balloon over the urinary bladder region im-

planted and reimplanted ureters, in congenital anomalies, in children and in individuals in whom instrumentation is harmful, excretion urography has been very helpful, aside from the fact that it offers in most cases a bilateral urogram. It is of very great help, particularly in patients presenting obscure abdominal symptoms and conditions, and in the differentiation of abdominal masses where one is adverse to subjecting the patient to retrograde pyelog-

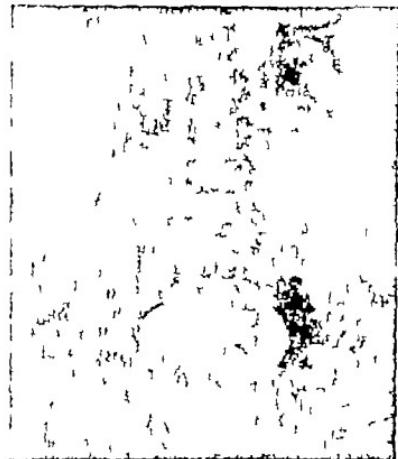


FIGURE 1. Same case as figure 2 by the subcutaneous method with Hippurant for comparison.

raphy. Chronic pyuria, usually attributed to simple pyelitis or pyonephritis has been found to have its origin from congenital anomalies, infected hydronephroses, pyonephroses, tuberculosus, urinary calculus, or as in one case, urinary retention due to contracture at the neck of the bladder. Moreover, the mere non visualization of a urinary tract as a result of disease of the renal parenchyma, as in pyonephrosis, is in itself of value in the localization and in the establishment of the diagnosis when viewed together with the other clinical data.

The contraindication to this method is uremia, for when the blood urea is high and the concentrating power of the kidney poor, the method yields few or no anatomic data and becomes not only superfluous but perhaps attended by danger.

Hippurant is manufactured by The Mallinckrodt Chemical Works, St. Louis, Mo.

## MISCELLANY

### NORTHEASTERN COUNTIES MEDICAL SOCIETY

The second quarterly meeting of the Northeastern Counties Medical Society was held November 4, 1934 in St. Johnsbury, Vermont. Twenty-four members enjoyed a delightful dinner served at the St. Johnsbury Hotel at 7 P.M.

portant in obtaining readable and suitably diagnostic urograms.

**FIELD OF APPLICATION** Case illustrations will demonstrate the field of application and usefulness of this method of investigation. Where retrograde pyelography has been contraindicated or difficult it has frequently shed in valuable light. For example, in the presence of hematuria, in obstructing lesions, in cases of



FIGURE 2. Intra-nous urogram (with Hippurant)  
Diagnosis—Bilateral pyonephrosis.

The business meeting was called to order at 8 p m by President C G Schurman. The minutes of the last meeting were read by Secretary Edward A. Cramton, and accepted.

The name of Dr Emily Taylor Wilson came up for election to the Society. She had been approved by the censors, Fitch, Leonard, and Piette, and was unanimously elected a member of the Society.

Secretary Cramton then introduced the guest speaker of the evening, Dr Henry Jackson, Jr., of Boston, who spoke upon "Diseases of the Blood."

He said, in summary, the common blood diseases can be classified as follows

- 1 Anemia due to lack of iron.
- 2 Anemia due to liver extract deficiency
- 3 Anemia due to congenital hemolytic jaundice
- 4 Leukemia, myelogenous and lymphatic
- 5 Agranulocytosis

Idiopathic hypochromic anemia is found most commonly in women of middle age. The red count may be nearly normal, the color index and hemoglobin very low. Hydrochloric acid is often absent from the stomach. Anemia due to hemorrhage, whether acute or prolonged, chlorosis and certain of the anemias of pregnancy are also microcytic anemias with a color index definitely less than 1. The treatment for all of these types of anemia is iron in large amounts. Feosol, grains XII a day, is probably the best and cheapest form of iron. If this is not available Ferric Ammonium Citrate should be given in doses of four to six grams a day. It is seldom, if ever, necessary to use intramuscular iron.

To the second class of anemia, those due to liver extract deficiency, definitely belong pernicious anemia, pellagra and those due to marked pathological changes in the gastrointestinal tract. The anemia is macrocytic, the color index above normal. There is almost invariably an absence of hydrochloric acid in the stomach. Cord lesions are common and early and gastrointestinal disorders frequently precede the obvious anemia. The treatment for this class consists in giving sufficient potent liver extract. It may be given intramuscularly. Under these conditions the extract representing 100 grams of liver is given intramuscularly each week. This is probably the most inexpensive method of treatment. Liver may also be given by the oral route. Under these conditions one gives six vials of Lilly Extract No 343 each day. Extralin may also be used. Failure of these patients to respond to adequate treatment is usually due to a wrong diagnosis, the presence of sepsis or the use of inert material.

Congenital hemolytic jaundice is best treated by splenectomy.

If an anemia will not respond to adequate liver or adequate iron therapy, it is probably irremediable.

The two types of leukemia are characterized by a great diversity of symptoms and a high and grossly abnormal white count. It is important to remember, however, that the diagnosis rests not so much

upon the actual white count as upon the immaturity of the white cells. Both forms of leukemia respond to appropriate x-ray treatment, although it is questionable whether life is actually prolonged. The patient is made much more comfortable, however, by this treatment.

A large number of diseases, some of them not associated with the blood forming organs themselves, give rise to moderate or extreme leukopenia. The disease, agranulocytosis, is probably a specific disease characterized by extreme leukopenia, absence of anemia, absence of hemorrhages and absence of thrombopenia. Certain of these cases are traceable to the administration of amidopyrine. In the majority, the etiology is unknown. At present, it is probable that the best treatment for this condition is the intramuscular injection of adequate (40 cc.) amounts of Pentnucleotide (N N R). Even under the best of conditions, however, the disease remains a very fatal one.

#### RECENT DEATHS

**DOANE** — ISAAC RANDALL DOANE, M D, of Springfield, Vermont, died in that city on July 13, 1934, after several years of ill health.

He was born in Bakersfield, Vermont, January 19, 1877, the son of J Bradley and Ellen (Randall) Doane. He was educated at the Brigham Academy at Bakersfield, and the University of Vermont, receiving his degree in medicine from the College of Medicine of the University in 1904. He began practice in Springfield in association with his brother, the late Dr C Bradley Doane, and after a short time moved to Putney, Vermont, for two years. He then moved to Vergennes, Vermont, but after a few months returned to Springfield to assume his deceased brother's practice. During the next twenty-seven years, Dr Doane lived in Springfield. He kept informed of the progress in medicine by attendance at the Mayo Clinic and by taking postgraduate courses in New York City. His devotion to his profession, together with his efficiency, led to the building of a large practice which prevented many other activities.

Dr Doane was a member of the St John's Masonic Lodge and Sigma Mu, national medical fraternity, and the staff of the Springfield Hospital.

He married Lucy Whitney in 1905. Of this union there are two children, Dr Whitney R Doane, who was associated with his father in practice, and Miss Shirley Doane, who is now in a school for hospital technicians in Worcester, Massachusetts. Besides his widow and children he is survived by a brother, Harry Doane, of Fairfield, Vermont, and a sister, Mrs Celia E Bennett, of Worcester, Massachusetts.

**WARD** — HENRY S WARD, M D, of Springfield, Vermont, died at a sanatorium in Burlington, September 13, 1934, after an extended illness.

He was born in Guilford, Vermont, February 18,

1885, the son of Frank E. and Olive (Fowler) Ward. His early education was obtained in the schools of his native town and Brattleboro and he graduated from the University of Vermont College of Medicine in 1887. His practice began in Readsboro Vermont, and after several years he moved to Springfield Vermont, where he acquired a large clientele. His interest in his profession was shown by several post graduate courses at medical centers in New York.

He was a member of the Vermont State Medical Society the American Medical Association, Windsor County Medical Society and the Springfield Clinical Society. He was especially active in social and civic affairs having served one term in the Legislature, representing the town of Readsboro and two terms

while living in Springfield, and was accorded important positions on committees of this body. He was a Mason an Odd Fellow a member of the Modern Woodmen of America and the Congregational Church.

Dr Ward was twice married first to Mattie L. Carpenter of Readsboro, September 12 1886. She died a few years later and on April 15 1897 he married Elsie Carpenter of Readsboro. He is survived by his widow one daughter Mrs Park H. Herrick whose husband is Lieutenant in the 7th Field Artillery U S Army Fort Collins Colorado a sister Mrs Marion Wheeler of Halifax, Vermont a brother Charles A. Ward, of Greenfield Massachusetts and two grandchildren.

#### COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1933 AND 1934 AND SEVEN YEAR AVERAGE

MONTH ENDING JANUARY 5 1935

Diseases	Week ending Dec. 16 1934	Week ending Dec. 22 1934	Week ending Dec. 31 1934	Week ending Jan 5 1935	Average cases reported for week corresponding to Jan 5 for past seven years	1933	Week ending Dec. 16 1933	Week ending Dec. 23 1933	Week ending Dec. 30 1933	Week ending Jan 6 1934
Actinomycosis	—	—	—	1	—	—	—	—	—	—
Cerebrospinal Men	1	—	—	1	—	—	3	103	84	160
Chicken Pox	316	183	122	149	134	155	—	—	—	11
Conjunctivitis Inf	—	—	—	—	2	—	1	—	—	—
Diphtheria	1	2	1	4	16	10	—	—	7	—
Dysentery Bacillary	1	—	—	3	—	1	—	—	—	—
Encephalitis Epid.	—	—	1	—	—	—	—	—	—	—
German Measles	5	5	3	8	8	—	—	—	—	1
Influenza	6	8	81	236	131	4	5	23	13	—
Measles	314	316	278	433	129	17	5	3	31	—
Mumps	41	33	39	32	61	104	45	41	116	—
Pneumonia (Broncho)	22	20	36	33	41	44	39	35	53	—
Pneumonia (Lobar)	21	33	41	63	55	63	51	60	64	—
Poliomyelitis	—	—	—	1	—	55	50	48	63	—
Scarlet Fever	39	39	46	51	71	—	—	—	—	—
Septic Sore Throat	2	5	4	3	2	4	3	2	1	—
Smallpox	—	—	—	—	4	—	—	—	—	—
Tetanus	—	—	—	1	—	—	—	—	—	—
Trichinosis	—	2	—	—	—	—	—	—	—	—
Tuberculosis (Pul)	25	15	17	13	28	21	25	8	13	—
Tuberculosis (O F)	3	—	3	—	3	—	2	4	1	—
Typhoid Fever	1	—	1	1	—	1	—	—	—	—
Undulant Fever	—	—	1	—	—	—	—	—	—	—
Whooping Cough	65	72	45	73	53	45	44	28	35	—
Gonorrhea	45	18	31	31	6	61	26	14	21	—
Syphilis	45	44	33	55	36	48	39	37	32	—

Remarks No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years.

**CASE RECORDS**  
*of the*  
**MASSACHUSETTS GENERAL**  
**HOSPITAL**

ANTE MORTEM AND POST MORTEM RECORDS AS USED  
 IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D

CASE 21041

PRESENTATION OF CASE

A fifty-seven year old physician was first examined approximately three years before his death.

At that time his blood pressure was 190/110 and his weight 195 pounds. His physician put him on a diet and he lost approximately 20 pounds. During the next two years his systolic blood pressure varied between 150 and 190 and, on one occasion, was 135. The diastolic pressure never was below 100, usually running in the neighborhood of 110 and 115. Several non-protein nitrogen determinations of the blood varied between 30 and 37 milligrams per 100 cubic centimeters. A blood sugar determination was normal. In thirty urine analyses a slight trace of albumin was always present. The sediment showed rare hyaline and granular casts. The blood Wassermann test was negative. His heart had not been enlarged to the usual clinical signs, but these were never definite because of his massive chest and unusual muscular development. Approximately two weeks before the onset of his present illness a routine examination showed a blood pressure of 200/120 and normal urine with the exception of a small trace of albumin. His weight was 188 pounds. About a week later he noticed that he tired very much more easily, did not feel very well, but did not quite know how to describe his feelings.

On the evening before the onset of his present illness he made a short automobile trip and returned home feeling well. The following morning he made several professional calls. At 10 a. m., while in a friend's cellar about to pick up a box, he felt a very severe substernal pain radiating into the back between the shoulder blades, to the thighs and to the left upper jaw, but not to the arms. At once he felt very weak, had cold perspiration and started for home in his automobile. Because of severe weakness and pain he stopped on the way for some brandy but finally reached home and went to bed. The pain eventually resolved itself into a precordial tension and a feeling as though a rope were tied around his chest.

When seen immediately following this attack his blood pressure was 136/70, his pulse 84, and an occasional extrasystole was felt. There were several long periods when almost no pulse

could be felt. An increased breadth of the cardiac dullness could not be demonstrated. The sounds were muffled, but a diastolic murmur was heard in the pulmonic area especially below the third rib. A blowing systolic murmur was also heard. A2 was much less sharp than P2. His temperature was 100°, and his white blood cell count was 18,200. He was given morphine with atropine at 2 and again at 5 p. m. The severe pain stopped at about 3 p. m., having lasted five hours, although a sense of soreness in his chest persisted. He was able, however, to sleep a little during the afternoon. A cardiac consultant saw him later that same day and found the maximal apex impulse in the fifth interspace 10 centimeters to the left of the mid-sternal line, the midclavicular line being 9 centimeters to the left. The sounds were of good quality. A2 was increased. A moderate systolic murmur was heard at the apex and a slight one at the base. There was also a very slight early diastolic murmur all along the sternum. No thrill or friction rub was heard. The rhythm was normal. The pulse was 70, the blood pressure 140/100. The lungs were clear except for emphysematous breathing and a few râles at the bases. The abdomen was soft. The liver and spleen were not felt. The dorsalis pedis pulsations were felt.

He was given three grains of digitalis that night. The following day, his blood pressure was 160/70 and there was no change in the heart findings. His pulse was firm, strong and regular. An electrocardiogram showed normal rhythm, rate 100, low T1, flat T2, high origin with slightly late inversion of T3, inverted P3 and inverted QRS.

On the third day his blood pressure remained about the same. His temperature, which had been 101° the night before, was 99°. The diastolic murmur was more audible over the entire left precordium and the systolic murmur was also present. A2 was less than P2. Half an hour later, after a brief conversation with a friend, his face suddenly became contorted without any cry or warning. He immediately became unconscious and died in a few minutes.

CLINICAL DISCUSSION

DR PAUL D WHITE "About a week later he noticed that he tired more easily and did not feel very well." I believe that was a matter of simple fatigue. He was planning to take a fishing trip when the present illness began.

One's experience would ordinarily justify a preliminary diagnosis of coronary thrombosis in such a case, even though there had been no angina pectoris previously. There may or may not be angina pectoris prior to an attack of coronary thrombosis. Our patient had had no pain, palpitation, or dyspnea, and he felt well enough to plan this fishing trip.

There were several points about the case which made us feel that coronary thrombosis was not to be diagnosed with any certainty and that the more likely diagnosis was dissecting aortic aneurysm. The first point was the radiation of the pain down the back to the thighs. Radiation of pain from coronary thrombosis may be to the back as well as to the jaw as occurred here, but I have never encountered a case of coronary thrombosis in which the pain was referred below the midback, as in this case, where you note at the beginning of the history, "pain radiating into the back between the shoulder blades, to the thighs and to the left upper jaw, but not to the arms.

The second point which caught our attention rather later than at the very beginning, although it was somewhat unimpressive even in the first history, was the suddenness of the maximum pain, that is, the pain began as intensely as it was felt later on, which is not true in most cases of coronary thrombosis. In coronary thrombosis the pain may in the course of a few minutes reach its maximum intensity but there are always a few moments of discomfort first before the pain reaches its height. In this particular case there was a feeling as if a sledge hammer had suddenly struck the chest.

A third point which was of importance in the diagnosis of this case was that the blood pressure, in spite of the severity of the attack, was maintained at a fair level that is, the systolic pressure dropped only to 136 and the diastolic to 70. He had thus a full pulse pressure with systolic pressure well above 100, which is unusual in a case of coronary thrombosis with pain as severe as in this case.

The fourth and final point which favored the diagnosis of dissecting aneurysm as against coronary thrombosis was the electrocardiogram. This was taken on the second day and it should have shown much more abnormality if coronary thrombosis had been to blame for such a very severe attack of pain. Total inversion of lead III was present and this may be normal, or it may be consistent with slight coronary insufficiency.

Because of the suspicion of dissecting aortic aneurysm involving the iliac arteries, pulsations in the feet were particularly looked for and were found to be full, I could feel a strong dorsalis pedis pulsation in each foot. That made us somewhat uncertain about the diagnosis of dissecting aortic aneurysm, but nevertheless did not cause us to rule it out.

The significance of the murmurs was not clear and I do not know that it is clear now. He showed a systolic murmur such as is often found in chronic hypertension at the base of the heart. He also showed a basal diastolic murmur variable in intensity the significance of which is not clear, though it sounded like a very slight aortic regurgitant murmur, it is

very doubtful if the dissecting aneurysm might have caused it although the possibility must be borne in mind.

The sudden death on the third day might have been the result of rupture either of the heart or of the aorta, or of sudden cardiac standstill or of ventricular fibrillation.

Our clinical diagnosis was first, a question of dissecting aortic aneurysm, and secondly, and less likely, a question of coronary thrombosis. It did not seem probable that any other factor such as pulmonary embolism might play a rôle.

DR. TRACY B. MALLORY Have you anything to add, Dr. Siscoe?

DR. DWIGHT L. SISCOE One thing that impressed me was the fact that this sudden onset of the pain came just after he had walked down stairs and just before he stooped over to pick up a box. That interested me very much. We ordinarily think of some strain as the cause of pain. This came before it. He did a surprising number of things after the onset of pain, without causing any complete collapse.

DR. P. D. WHITE I might add that he was a very strong and courageous man and would not give in.

DR. SISCOE When he was first seen by me he weighed 195 pounds and was a very strong man. He was having very severe basal head aches, but after losing twenty pounds these headaches disappeared. We noticed that when he weighed 180 pounds his blood pressure stayed at about the same level, but increased as he gained weight.

DR. JAMES C. WHITE Did the fact that the pain skipped his arms, although it went to his jaw, have any influence in making you think it was dissecting aneurysm instead of coronary occlusion? In several aneurysms we have seen here there has been pain in the neck but none in the arms, as one might expect.

DR. P. D. WHITE We have occasionally had patients with angina pectoris or coronary thrombosis in whom the pain was referred to the jaw without being referred to the arms, but usually the reference would be to both, if jaw pain occurred at all.

DR. HOWARD B. SPEAGUE I think we have had rare cases referred to one tooth without radiation to the arm.

#### CLINICAL DIAGNOSES

Dissecting aneurysm of aorta?  
Coronary thrombosis?

#### ANATOMIC DIAGNOSES

Dissecting aneurysm of the aorta with rupture

Hemopericardium

Chronic meso-aortitis, non specific (Kling.)

Cardiac hypertrophy, hypertensive type.

Arteriosclerosis.

Malignant vascular nephritis  
 Glomerulonephritis, acute  
 Pulmonary atelectasis, zonal  
 Operative scars, both knees and appendectomy

#### PATHOLOGIC DISCUSSION

**DR MALLORY** The postmortem examination here showed a greatly distended pericardium filled with fresh blood. On opening the pericardium it was evident that the aorta was rather markedly thickened, to perhaps half again its normal diameter, and on making a slight incision into it one entered an apparent lumen and then discovered a second seemingly complete aorta inside the first one. The dissection started with a rent in the intima about three centimeters above the aortic valve and worked downward and backward to the annulus fibrosus and even out a short distance along one coronary artery. In the other direction it extended upward over the arch, out the first three centimeters of the innominate artery, along the entire length of the thoracic and abdominal aorta and finally about six centimeters down each iliac artery. The point of rupture of the external layers in the pericardium could not be determined. It was evidently quite a small one and the leak of blood into the pericardium was presumably a slow one, even though the terminal event was clinically fairly dramatic. As far as I know, the initial dissection in these cases never causes death. There are rare cases on record where the dissected space has become endothelialized and blood has continued to flow through both channels of one of these double aortas, with the patient dying years later of some other disease. That is very unusual. The ordinary thing is for the outer layer of the aortic wall to rupture. If the rupture is close to the base of the heart it would probably be into the pericardial cavity, if it is a little farther down the thoracic aorta, into the pleural cavity, and if it is in the abdominal aorta it ruptures into the abdominal cavity, like the case Dr Sprague discussed a few weeks ago.\* These cases of dissecting aneurysm, I think it is fair to say, are never due to syphilis. A certain proportion are due to pure arteriosclerosis, usually in very elderly individuals. Another quite large group is consequent to media necrosis cystica, which Erdheim has described, and since that occurs at any age it is possible to have dissection even in the twenties, although the usual age is fifty or sixty. This aorta showed extensive arteriosclerosis. It did not show anything characteristic of media necrosis cystica. It did show,

however, a very marked aortitis of a type that has been described by Klinge of Leipzig in cases of malignant hypertension, which is sometimes almost indistinguishable from rheumatic aortitis, histologically. Since the hypertension clinically and the necrotizing arteriolitis of the kidneys all point to a fairly malignant form of hypertension, I think we can assume that the aortitis in this case fits in that group. It seems probable that a weakening of the media during the development of the aortitis was the underlying cause of the condition.

**DR P D WHITE** I have here Shennan's monograph about which Dr Bland has spoken. It is a review of 300 cases. They are nearly all postmortem records, not accompanied by clinical notes, sometimes the specimens have been found in medical museums without any adequate history, but there are a few instances where histories are included. There is a summary of symptoms and clinical signs that fit more or less with this case and other cases that we have seen. There is particular note of occlusion of the branches of the aorta by the dissection of the aortic wall. A few points in summary are that the condition is most common in the male sex in the fifties, that syphilis is only rarely the cause, that weakness in the media is primarily responsible, and that hypertension is usual but not invariable. Immediate survival is only once in four times, and in some of these cases with longer survival, there is an establishment of a double aorta. It is important because of the poor prognosis to distinguish this condition as quickly as possible from coronary thrombosis, where the prognosis is much better. The immediate prognosis in coronary thrombosis is favorable in about three out of four cases, whereas in dissecting aneurysm it is less than one out of four. The history is very obscure in some cases. It is conceivable that there may be electrocardiographic changes if the dissection involves and compresses the coronary arteries. Whether or not the slight change in lead III in our case was due to compression of the right coronary artery we cannot say. X-ray evidence is bound to be inconclusive in the great majority of cases.

**A PHYSICIAN** In what portion of the aortic wall does the plane of dissection usually occur?

**DR MALLORY** It is almost always in the midportion of the media. Muscle fibers can regularly be found on either side as was the case here. The degree of dissection was maximal on the posterior aspect of the aorta, so that the outer layers of the aorta had been stripped back over the intercostal arteries for nearly a quarter of an inch. There was, however, no evidence of occlusion of any of these vessels.

## CASE 21042

## PRESENTATION OF CASE

A fifty-one year old American male school teacher on the morning of admission had a sudden, rather terrific, dull pain in the entire lower abdomen and pelvis which "seemed to go all over him", but especially to both legs upper part of chest and both shoulders. At the same time he had a desire to go to stool got up and went to the bathroom Within what he estimated to be five minutes after the onset of the pain he was completely paralyzed from his waist down. The numbness began in his feet and rapidly ascended to a point just above the symphysis. The pain in the chest and shoulders soon disappeared but that lower down particularly across the pelvis persisted. There was no nausea or vomiting His blood pressure taken by his physician was 140 systolic

His health had always been good. There was no history of rheumatic fever precordial pain or shortness of breath There had been no trouble in walking and no bladder symptoms. Two days previous to the present illness he had a mild diarrhea which was attributed to his diet

Physical examination showed a middle-aged man with a pale ashy face complaining of intense pain across the pelvis There was complete flaccid paralysis of both legs The feet and lower part of the legs were waxy white in color and very cold Above this point extending into a well defined level between the symphysis and umbilicus the skin was bluish red and fairly warm but cooler than the normal skin No pulsation could be felt in the dorsalis pedis or femoral artery on either side. The heart showed a short, rather high pitched systolic murmur heard best in the aortic area but transmitted as far as the apex there was no thrill The blood pressure was 220 systolic. The abdomen was not tender or rigid The tendon reflexes in the arms were present and equal The knee jerks and ankle jerks were absent, and the plantars showed no response There was anesthesia to pinprick below the upper part of the thighs and in the areas supplied by the sacral segments The patient said that he had no feeling in his legs and could not tell where they were.

The temperature was 100.5°, the pulse 75 The respirations were 20

A lumbar puncture showed an initial pressure of 50 which rose slowly to 220 upon jugular compression and gradually fell upon release. The fluid was clear When the needle was inserted into the spinal canal the patient said that he felt pain in his foot He was immediately taken to the operating room.

## DIFFERENTIAL DIAGNOSIS

DR ROBERT R LINTON We have a fifty-one year old man who suddenly had severe lower abdominal pain which extended chiefly down into the pelvis and into his legs It is interesting to note that he complained of pain in the chest and both shoulders, and also that he had to go to stool The paralysis and numbness which came on very quickly I feel, are also of importance

In going over this case and considering the history and physical examination, it is obvious what he had wrong with him, I think it is not so obvious what caused it. It must have been that he had arterial occlusion, most likely at the bifurcation of the aorta or higher His story is consistent with arterial occlusion He first noticed pain and then numbness—that is usually the order in which we see these symptoms—and later on he developed paralysis He also was anesthetic to pinprick over his legs, which one always finds in arterial occlusion at the bifurcation of the aorta I think the blood pressure is of interest. His local doctor noted that it was 140 systolic and when he arrived at the hospital it was 220 systolic. This change indicated that the arterial tree had been cut down to some extent and he had a compensatory hypertension The fact that the skin was bluish red and fairly warm halfway between the umbilicus and symphysis points to an obstruction at the bifurcation of the aorta As a rule with a "rider" embolus at the bifurcation of the aorta one sees some discoloration of the skin over the lower abdomen.

Apparently they were questioning his neurological signs and did a lumbar puncture, which as far as I can tell was perfectly normal and certainly showed no block. The fact that he complained of pain in his foot during the lumbar puncture is probably due to the fact that the needle was inserted into the sensory tract in the spinal cord leading from the foot

I cannot tell from his cardiae findings whether there was anything abnormal in the heart The heart is the most common site for the origin of arterial emboli It seems unlikely to me, however, that the heart was the origin of an embolus in this case

The other thing that one must consider is that this picture may be produced by a dissecting aortic aneurysm which would occlude the aorta above the iliacs However, I do not think I can make that diagnosis As far as I can go is to say that he had arterial occlusion at the bifurcation or slightly higher, due either to an embolus or a dissecting aneurysm.

## CLINICAL DISCUSSION

DR LELAND S. McKITTRICK He had what we interpreted as obvious signs of occlusion of

the arterial tree at or above the bifurcation of the aorta. We were unable to explain it. We thought that it was most likely due to an embolus, from whence it came we did not know. We were disappointed that careful exploration of this region through the femoral on each side failed to reveal any evidence of embolus. We were likewise unable to demonstrate any other cause of the obstruction.

A PHYSICIAN What explanation did you have in mind for the pain in his chest and shoulders?

DR MCKITTRICK It was not explained.

DR TRACY B MALLORY Dr Viets, have you any comment?

DR HENRY R VIETS I am not entirely familiar with the effect upon the spinal cord of a block in the abdominal aorta. There are many symptoms in this case pointing to a lesion of the lumbosacral spinal cord, for, indeed, the picture is not unlike that which we find in transverse myelitis. The sphincter dysfunction and the level of anesthesia speak strongly for such a localized lesion. We know little about the effect on the spinal cord of cutting off the blood supply from the aorta. I should not be surprised, therefore, if, in addition to the findings in the abdominal aorta, some evidence of a lesion in the spinal cord itself were disclosed by the autopsy.

#### CLINICAL DIAGNOSIS

Embolus of aorta.

DR ROBERT R LINTON'S DIAGNOSIS

Embolus of aorta

#### ANATOMIC DIAGNOSES

Dissecting aneurysm of the aorta  
Media necrosis aortica cystica.  
Arteriosclerosis  
Dorsolumbar scoliosis  
Aortic stenosis (arteriosclerotic)

#### PATHOLOGIC DISCUSSION

DR MALLORY It is possibly a little unfair to take this case last, since it is a very old one and some of you probably have heard it before. It is another case of dissecting aneurysm, almost identical in its anatomic findings with the preceding case. The process extended the entire length of the aorta, down the right coronary artery for 15 cm., down both iliac arteries, but at that point instead of breaking into the lumen as it ordinarily does the process had lifted the intima up so far and pressed the two layers of intima so closely together that occlusion was produced. The effect was that of a valve formation in each iliac artery. The process in this case had caused rather extensive occlusion of other vessels, too. Whereas in the first case all the arteries coming off the aorta apparently remained patent, in this case not only the two iliacs but also the inferior and superior mesenterics were completely occluded. He lived long enough so that small thrombi developed just beyond the point of occlusion in each artery.

DR PAUL D WHITE Were they occluded in the same way that the ilacs were?

DR MALLORY Yes.

A PHYSICIAN In the first case what was the state of the iliac arteries?

DR MALLORY At the lower end of the dissection, rupture into the lumen had occurred, so that the blood was pouring out freely.

I think there is no doubt, as Dr Viets suggested, that some of the arteries to the spinal cord certainly must have been occluded in this second case. Although we did not have permission to do the cord, I think there is no question that it would have shown degeneration in its lower segments.

This case, incidentally, showed a very typical histologic picture of media necrosis aortica cystica.

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## HOME CARE FOR CHILDREN WITH HEART DISEASE

RECENT advances in our knowledge concerning rheumatic fever and its important complication, rheumatic heart disease, have emphasized two factors of major importance in managing these patients. First, rheumatic fever is a generalized systemic disease, essentially chronic in nature. It may persist for months or even years usually as a low grade and for the most part subclinical infection. Recrudescences or recurrences of the symptoms and signs of an acute illness are prone to appear from time to time, often brought to the clinical level by preceding tonsillitis or respiratory infection. Secondly it is evident from careful follow up studies of these patients that progression in heart disease, when it occurs, takes place during the time of active rheumatic infection.

The problem in treating this prevalent and disabling disease of childhood is in large measure similar to that which has proved effective in dealing with another chronic infection, namely tuberculosis. Long bed rest is essential. Two or three weeks in bed, until the acute

manifestations of the disease have subsided, have proved to be inadequate, and relapses are frequent when patients are allowed up too soon. Several months or even one or two years in severe cases may be necessary before all clinical and laboratory evidence of active disease subsides.

The facilities of our large general hospitals are limited and, hence, available only during the acute stages of the disease. In Boston notable service has been rendered by the House of the Good Samaritan in providing long bed care, as well as intensive study, for many of these patients. The greatest burden, however, in arranging suitable convalescent care in the majority of instances has fallen upon the social service departments of the general hospitals, for it is among the poorer class that rheumatic fever most frequently occurs. During the past twenty years a group of interested and charitable women working as the Committee for the Home Care of Children with Heart Disease in close cooperation with the Cardiac Clinic of the Massachusetts General Hospital has provided facilities in the homes of many of these children whereby long bed care, otherwise impossible, has been made available. Under social service supervision, instruction by craft workers and tutoring by volunteer teachers have been important parts of the program and have served to insure the cooperation of both the patient and the family through many months of bed rest.

It is with a feeling of satisfaction that the medical profession learns that recently the Children's Mission to Children on its eighty fifth anniversary has announced its association with the Committee for the Home Care of Children with Heart Disease in a plan to elaborate and carry forward the work already in progress. Suitable cases of rheumatic fever and rheumatic heart disease requiring prolonged rest in bed will be selected by the Cardiac Clinic of the Massachusetts General Hospital. The homes of these individuals will be investigated by capable social workers and when possible bed care will be arranged in the patient's own home. If the home conditions are inadequate for prolonged convalescence or a change of environment seems desirable, foster homes will be utilized until suitable adjustments can be made, or until improvement in the patient's condition warrants treatment with supervision at home. Occupational therapists will determine the patient's interests and provide instruction along lines best suited to the possible future limitations of the individual case. Visiting teachers will aid in keeping up the children's school work. Medical supervision will be directed from the clinic, but necessary medical home visits will also be arranged.

It is to be hoped that not only will a service, otherwise unavailable, be rendered this unfor-

the arterial tree at or above the bifurcation of the aorta. We were unable to explain it. We thought that it was most likely due to an embolus, from whence it came we did not know. We were disappointed that careful exploration of this region through the femoral on each side failed to reveal any evidence of embolus. We were likewise unable to demonstrate any other cause of the obstruction.

A PHYSICIAN What explanation did you have in mind for the pain in his chest and shoulders?

DR McKITTRICK It was not explained.

DR TRACY B MALLORY Dr Viets, have you any comment?

DR HENRY R VIETS I am not entirely familiar with the effect upon the spinal cord of a block in the abdominal aorta. There are many symptoms in this case pointing to a lesion of the lumbosacral spinal cord, for, indeed, the picture is not unlike that which we find in transverse myelitis. The sphincter dysfunction and the level of anesthesia speak strongly for such a localized lesion. We know little about the effect on the spinal cord of cutting off the blood supply from the aorta. I should not be surprised, therefore, if, in addition to the findings in the abdominal aorta, some evidence of a lesion in the spinal cord itself were disclosed by the autopsy.

#### CLINICAL DIAGNOSIS

Embolus of aorta.

DR ROBERT R LINTON'S DIAGNOSIS

Embolus of aorta

#### ANATOMIC DIAGNOSES

Dissecting aneurysm of the aorta  
Media necrosis aortica cystica.  
Atherosclerosis  
Dorsolumbar scoliosis  
Aortic stenosis (arteriosclerotic)

#### PATHOLOGIC DISCUSSION

DR MALLORY It is possibly a little unfair to take this case last, since it is a very old one and some of you probably have heard it before. It is another case of dissecting aneurysm, almost identical in its anatomic findings with the preceding case. The process extended the entire length of the aorta, down the right coronary artery for 15 cm., down both iliac arteries, but at that point instead of breaking into the lumen as it ordinarily does the process had lifted the intima up so far and pressed the two layers of intima so closely together that occlusion was produced. The effect was that of a valve formation in each iliac artery. The process in this case had caused rather extensive occlusion of other vessels, too. Whereas in the first case all the arteries coming off the aorta apparently remained patent, in this case not only the two iliacs but also the inferior and superior mesenterics were completely occluded. He lived long enough so that small thrombi developed just beyond the point of occlusion in each artery.

DR PAUL D WHITE Were they occluded in the same way that the iliacs were?

DR MALLORY Yes.

A PHYSICIAN In the first case what was the state of the iliac arteries?

DR MALLORY At the lower end of the dissection, rupture into the lumen had occurred, so that the blood was pouring out freely.

I think there is no doubt, as Dr Viets suggested, that some of the arteries to the spinal cord certainly must have been occluded in this second case. Although we did not have permission to do the cord, I think there is no question that it would have shown degeneration in its lower segments.

This case, incidentally, showed a very typical histologic picture of media necrosis aortica cystica.

nell University, he took the medical course at the Albany Medical College of Union University, receiving the degree of Doctor of Medicine in 1883. A year later we find him at the recently organized Bureau of Animal Industry at Washington the staff of which then consisted of Salmon in the capacity of director, Smith, Kilborne and a Negro helper. He began his work here in a period in which a succession of epoch making discoveries were being made in reference to etiology, transmission and control of infectious diseases. Pasteur had already devised methods of immunizing animals against anthrax and was soon to put his anti rabies inoculation to test. Koch had cleared up the etiology of anthrax and had shown the part played by spores in its transmission. He had also discovered the tubercle bacillus, thus definitely establishing tuberculosis as an infectious disease. Laveran had described the micro-organisms of a malarial fever, while Patrick Manson had only recently shown that mosquitoes served as intermediate hosts in filariasis. There is reason to believe that Smith was in a way a disciple of Koch at least he adopted the same critical and thorough going methods of investigation rather than the more or less haphazard methods of Pasteur. In the course of his earlier work, he discovered the hog cholera bacillus, later showing the relationships of various bacteria of the paratyphoid-enteritis group to which this belongs. With Salmon he demonstrated that products of bacterial growth could be utilized in producing immunity.

The masterpiece of his long series of contributions soon followed. In 1888 he was directed by his chief to work on the problem of Texas Fever in cattle. This work was done in collaboration with Kilborne, and while it is apparent that valuable suggestions as to the mode of transmission of the disease were furnished by Kilborne and were forthcoming from various other sources, especially from the cattlemen themselves, there is no doubt that we owe the first actual demonstration of the role of an arthropod in the transmission of an infectious disease to Smith's painstaking and thorough methods of research. The Texas Fever report has set a standard for accuracy and fullness of treatment that would be difficult to excel and not only furnished the basis for the control and prevention of this scourge in cattle but also paved the way for the elucidation of the transmission of insect borne diseases, such as malaria, yellow fever, sleeping sickness, bubonic plague, and infections of the typhus group. If this were Smith's only contribution to medical science, he might have been justifiably proud of his accomplishment, but this marked only the beginning of a long series of important researches. While still at Washington, he noted the differences between the human and bovine strains of tuberculosis, discovered the proto-

zoön of blackhead in turkeys, and investigated the possibilities of immunization through the inoculation of killed bacteria. While at Washington, he held the Professorship of Bacteriology at the George Washington (at that time the Columbian) University.

Theobald Smith was called to Harvard in 1895 through the coöperative efforts of the University and the Massachusetts State Board of Health, being made Professor of Applied Zoölogy and given charge of the production of smallpox vaccine and diphtheria antitoxin for the State. A year later following the endowment of the chair of Comparative Pathology by Mr. George Fabyan, he became the first Professor of that department. After a period spent in Europe in visiting institutions engaged in the production of vaccines and sera and in studying methods, he established and organized the State Antitoxin Laboratory at Forest Hills. Located at first in the old Bussey Institution and provided with meager equipment, eventually a well planned and up-to-date laboratory was built with facilities also for the care of inoculated animals. There are doubtless many physicians who have little realization of Smith's contributions to public health in Massachusetts and of the amount of study and constant supervision required for the production of safe vaccine and antitoxin. Not only were these products uniformly efficient but there were no accidents throughout his twenty years of service.

During this period he was gradually building up the subject of Comparative Pathology. It is probably rather unusual for the medical student as he studies the subjects of Anatomy, Physiology, Pathology, etc., to realize what they are all about, but those who at the old school on Exeter Street, took Theobald Smith's optional course in "The Comparative Etiology of Infectious Diseases" could scarcely fail to see the light. The disjointed subjects which they had been studying suddenly fell into place and for the first time a conception of disease as a whole dawned upon the mind. We need to scarcely more than enumerate the more important of Smith's subsequent contributions, most of them are so well known. His early work on anaphylaxis (anaphylaxis in the guinea pig for a time being referred to as the "Theobald Smith phenomenon") being basic to much of our present understanding of hypersensitivity, the role of sugars in the cultivation of bacteria and in the production of their toxins, the fermentation tube and finally the demonstration of the immunization properties of the toxin antitoxin mixture which in recent years has been so widely utilized in immunization against diphtheria. The origin of epidemics of septic throat from the milk of cows infected with a streptococcus of human origin was elucidated through his studies and those of his collaborators. In his laboratory it was demon-

strated that milk of cows infected with *Bacillus abortus* could produce disease in guinea pigs

Among Smith's personal friends at Harvard were Charles W Eliot, Henry P Wolcott and Fiederick C Shattuck, who were instrumental in bringing him to Harvard and in establishing his department and who continued thereafter his enthusiastic supporters Marshal Fabyan also remained a personal friend throughout his life It would appear, however, that Simon Henry Gage, his old professor of physiology at Cornell, was the only one who could be regarded as a real intimate friend For Professor Gage's visits great preparations were made, and these occasions were characterized by reciprocal back clapping and an atmosphere of general relaxation and good fellowship On the other hand, his admirers were legion and were widely distributed throughout many countries of the world For the extent and sincerity of this admiration, one only needs to recall the speeches of the distinguished men who were gathered at his Farewell Dinner on June 2, 1915, or read the letters and cablegrams that came from abroad Many will recall the great gathering at this Farewell Dinner coming at the end of twenty years of service to Harvard and the State, the humorous, illustrated place-cards entitled "Thanks to you, Theobald Smith" prepared by Fabyan, and the unveiling of the bustrelief of Smith made by Bela Piatt

In reviewing the career of a great man, it is perhaps fitting to consider some of his outstanding characteristics Smith was of a modest, retiring disposition, not especially robust but showing a great amount of energy in his investigations and in attention to the business of his department Throughout his life he found relaxation in music, of which he was very fond, he played the piano until recently when a stiffening of his fingers finally interfered He was in no sense aggressive by nature but courageous when occasion demanded It is well recognized that he was critical of evidence presented by other investigators, relying chiefly upon that of his own observation It was doubtless on this account that he failed to attract the following of students that might have been expected On the other hand, his influence was widely felt and the young investigator found him approachable, sympathetic and stimulating One never left an interview with him without a feeling of exhilaration and a sense of having profited thereby The problems that he chose to work upon were almost invariably utilitarian in character, that is they were undertaken with the view that they might eventually prove useful to mankind Whether the major success attending his being allotted the practical problem of Texas Fever early in his career influenced him in this respect we cannot say Having launched upon a problem the utilitarian objective did not blind

him to great principles Furthermore what he regarded as practical problems would probably be considered by others as more or less academic in nature Another characteristic of his work was the meticulous care with which he recorded observations and data It was not his custom to use large series of animals in his experimental work, but his record of each animal was complete as to pedigree, identification and all the known circumstances of the experiment With his keen mind, quick to see the significance of results, and with the care with which he planned and checked his experiment, large series were not essential to him Thus he did not resort to any great extent to statistical evidence, his methods were simple and direct Unlike many investigators who apply themselves so closely to their subject that they lose perspective, Smith had the faculty of fitting the parts together and of seeing their relationship to one another in the picture as a whole He was not one to limit himself to a single method or technique, but utilized different methods in order to check one by the other Shoddy work, slipshod thinking or dishonesty in any form, he could not tolerate His ability to generalize led him to make many addresses and to write many papers pertaining to the subject of disease Smith went in 1911 to Berlin as Exchange Professor from Harvard and acquired the respect and admiration of a large following of German scientists

It is a matter of gratification to those who have followed Smith's work that toward the close of his life he should have collected together his views on disease in a book entitled "Parasitism and Disease" This work is based on his Vanuxen lectures with some expansion and the addition of several chapters It shows as might be expected of one of advanced years, some faults, but nevertheless presents a great amount of pertinent material in a simple manner that may readily be understood by the student or layman In this is summed up his conception of disease processes and thus furnishes a fitting culmination to his life's work

It is probably not generally known that in 1902, Dr Smith was invited by the Board of Directors of the Rockefeller Institute to accept the directorship of a department for the study of animal diseases The foremost of several reasons which he gave for declining this offer was "a strong sense of gratitude toward the President and Fellows of Harvard University and Mr George Fabyan for the sacrifices they have made in founding and maintaining the Chair of Comparative Pathology, which is only now beginning to show signs of fruitage" It is of interest that Smith at this time outlined what he considered was essential to the organization of such a laboratory Thirteen years later, he was induced to accept the Directorship of the Department of Animal Pathology of the

Rockefeller Institute for Medical Research, at Princeton, New Jersey, the establishment and organization of which required several years of earnest effort. It is no secret that this project was undertaken by the Rockefeller Board of Directors with the confidence, although without positive assurance, that Dr Smith might be secured to take charge of the new work, so that this department might be considered to be established for him. Thus, it is seen that he was actually concerned in the building up of the United States Bureau of Animal Industry and in the creation of the Massachusetts State Antitoxin Laboratory, the Department of Comparative Pathology at Harvard, and the branch of the Rockefeller Institute of Medical Research at Princeton, New Jersey devoted to animal diseases. With advancing years, he eventually asked to be relieved of his administrative duties but continued his interest in research work. Notable among his later contributions was the demonstration of the importance of colostrum in the resistance of the new born to bacterial infections. With unimpaired mind, he maintained an active interest in scientific matters and affairs. We find him only a brief time ago in his summer home at Silver Lake, New Hampshire, keenly enjoying life and laying plans for future work. Thus at last what more fitting than to repeat in fare well the title bestowed by Dean Bradford, "Theobald Smith, a prince of scientists."

## MASSACHUSETTS LEGISLATIVE NOTES

H 114 under the title "An Act relative to the Holding of Inquests in Case of Deaths by Violence and Otherwise" provides for an amendment of Chapter thirty-eight, section eight, of the General Laws Centennial edition, as amended by chapter one hundred and eighteen that the attorney general or the district attorney may require an inquest to be held in case of any death caused by external means notwithstanding that no other action has been taken. The procedure is defined in the bill.

H 61 provides for an amendment to Section one hundred and seventeen of the General Laws to read as follows:

SECTION 117. Each city or town shall provide for treatment either in a hospital or as outpatients, of indigent persons suffering from gonorrhœa or syphilis.

H 60 provides for an amendment to Chapter seven of the General Laws which will if enacted prevent the admittance of a pupil to a public or private school except upon presentation of a physician's certificate that the child has been vaccinated. This is in substance a continuation of the campaign carried on for so many years by Dr S. B. Woodward.

H 47 contains recommendations of the Commissioner of Mental Diseases to the effect that the name

of the Gardner State Colony should be changed to the Gardner State Hospital because it is now organized to give the same standard care to mental cases as is provided in the other State Hospitals of the Commonwealth.

In addition, the recommendation is made that section 19 chapter 123 of the General Laws be repealed, thus placing the supervision of family care patients upon the hospitals that are properly charged with such supervision.

H 27 contains the recommendations of the Commissioner of Education which are in substance to advance the age at which minors may be legally employed from fourteen to sixteen years of age, and requires that minors between the ages of sixteen and seventeen shall be in school or at work properly certified.

Increase of grade educational requirements, except in case of mental or physical deficiencies two or more grades to the completion of the eighth grade or eight years at school (now seven years at school).

Open the continuation school for full time attendance in employment preparation classes of minors.

Increase the required number of days of elementary school from 160 to 180.

The transportation of physically handicapped children.

Raising the appropriation for printing material to be used in connection with the physical examinations of school children to committees and boards of health to \$1200.

Additional facilities for the education of the blind.

Recommendation for a change in the law which will prohibit pupils from directing vehicular traffic.

A change in chapter 73 of the General Laws which will permit the Department to confer the degree of Master of Education in the State Teachers Colleges and that the Lowell Textile Institute may be given the right to grant degrees of Master of Science in Textile Chemistry and in Textile Engineering.

H 122 provides for an amendment to chapter 260 of the General Laws as further amended by chapter 318 which will confine actions of tort for malpractice, error or mistake against physicians, surgeons, dentists, optometrists, hospitals and sanitaria, to a period within two years next after the action accrues and for various other causes specified in the bill.

H 161 will if enacted, prevent sulphur dioxide or any of its compounds in meat or meat products offered for sale.

## MISCELLANY

### MORTALITY RATES

Telegraphic returns from 86 cities with a total population of thirty-seven millions for the week ending January 1 indicate a mortality rate of 14.9

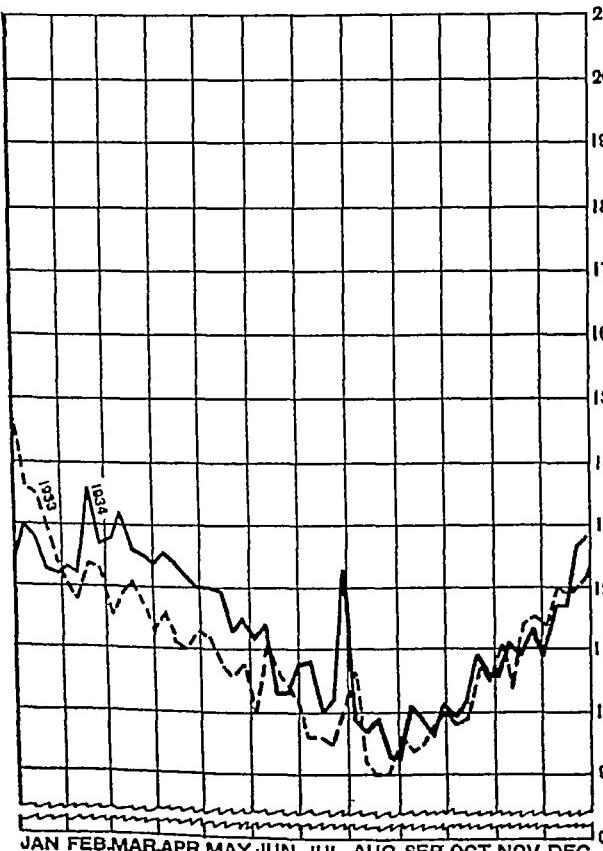
as against a rate of 12.8 for the corresponding week of last year. The highest rate (27.7) appears for Nashville, Tenn., and the lowest (9.0) for Milwaukee, Wis. The highest infant mortality rate (16.2) appears for Nashville, Tenn., and Omaha, Nebr., and the lowest for Bridgeport, Conn., Canton, Ohio, Spokane, Wash., Syracuse, N.Y., and Waterbury, Conn., which reported no infant mortality.

The annual rate for 86 cities is 13.8 for the two weeks of 1935, as against a rate of 12.9 for the corresponding period of the previous year.

**SUMMARY OF DEATHS AND DEATH RATES (ANNUAL BASIS) FROM AUTOMOBILE ACCIDENTS PER 100,000 ESTIMATED POPULATION FOR 86 CITIES FOR CORRESPONDING PERIODS OF 1935 AND 1934**

	Week ending		First 2 weeks	
	Jan. 12, Jan 13	1935	1935	1934
Total deaths	192	191	420	387
Death rate	26.8	26.6	29.3	27.0
Deaths due to accidents in city	160	166	356	322
Death rate	22.3	23.1	24.8	22.4

**DEATH RATE PER 1,000 POPULATION OF CITIES REPORTING FOR 1934\***



\*Department of Commerce Division of Vital Statistics

## CORRESPONDENCE

### AN URGE TO ACTION

Dr William H. Robey,  
President, Massachusetts Medical Society,  
*Dear Dr Robey*

In the January 10 issue of *The New England Journal of Medicine* there appeared an editorial and a letter from Dr Miles calling attention to the bill to be introduced by him at the present session of the Legislature.

The need, or at least the desirability of such legislation, should prompt united action on the part of the profession, and in this connection there occur to me two thoughts which I am passing along to you, viz

1 How may one know when a hearing is to be held?\* Would it be possible to have this information published in the *Journal* so that all readers might be able to plan to attend?

2 The Secretary of each District Society might obtain the signature of each of his members on a petition or on form letters, these petitions or form letters to be placed in the hands of the Chairman of the Committee on State and National Legislation to be used by him at the hearing, and copies of the same forwarded to the members of the Legislature representing the several districts.

I am writing this latter thought to Dr A. H. Blake, President of Middlesex South District, and am enclosing a copy of my letter

Very truly yours,  
L G RONDEAU  
555 Washington St., Brighton, Mass

\*EDITORIAL NOTE. For the information of the writer of the letter to Dr Robey, notices of hearings often appear in the daily papers but not always and this *Journal* seldom has such notices early enough for publication in advance of the hearings.

If any doctor is desirous of attending the hearing on Dr Miles' bill if he will ask his Representative or Senator to keep him informed of the date he will probably be notified in time.

### SOCIAL INSURANCE

December 29, 1934

Editor, *New England Journal of Medicine*,

A meeting on Social Insurance arranged by the League of Medical and Allied Professions was held at the Boston Medical Library on December 17, 1934. Mrs Dorothy W. Douglas, assistant professor of economics at Smith College, was the speaker of the evening. Mrs Douglas brought out the fact that no Federal Law of any kind exists to meet the present problem of unemployment. A Bill known as the Workers Unemployment Insurance Bill—H R 7598, has been introduced in the United States Congress and has been the subject of discussion by various groups including industrial workers, farmers, professionals, etc. The main features of the Bill are as follows:

1 Unemployment Insurance should cover all involuntary unemployment in all wage-earning or salaried occupations or self-employment.

2 It should cover all unemployment, whatever the

cause — industrial changes, occupational accidents, sickness, maternity or old age.

3. It should prevent lowering of standards of living by providing not a "dole" but amounts equal to average earnings in the trade or profession.

4. Its administration should be in the hands of the insured.

5. The source of funds should be the higher individual and corporate incomes and not the working population with consequent transfer of purchasing power from channels of investment to channels of consumption.

It is assumed that professional and expert services will be provided under the provisions of the Bill. As to the exact nature of such provisions it would seem that in the field of medical care and treatment it should be none other than the medical profession itself that should take a hand. The medical opinion elicited at the meeting (possibly because of the inexperience of the chairman) did not contribute materially to the clarification of medical points involved in the Bill. However it was decided at the meeting that a committee be appointed by the chairman to study the Bill from the point of view of its medical implications. It was expected that a delegate from this group would probably be present in Washington at the National Congress for Unemployment and Social Insurance which meets on January 5, 6, 7, 1935.

RUTH WEISSMAN A.M.D. Chairman.

311 Commonwealth Avenue  
Boston, Mass.

#### ON LOUSINESS AND THE ORIGIN OF THE COMB

Editor *New England Journal of Medicine*,

Many of the readers of the *Journal* have probably seen Dr Zinsser's fascinating article on "History and the Louse" in the January number of the *Atlantic*.

In connection with this subject it is of interest to recall that, according to Cabanès,\* it was to this swiftly running and alighting little creature that we owe the origin of the comb. He says "Ah! Cette vermine! Leur en a-t-elle causé du tourment à nos bons aïeux!"

Cabanès continues telling us that an instrument must be found to act as a remedy for their ravages from this comes the idea of the comb with strong and long pointed teeth.

The first combs, we are told were made from the back bones of fishes. As time went on combs of wood, bone and ivory took the place of the primitive fish combs.

Prehistoric peoples of the entire world, we are told have made use of the comb but it must not be forgotten that they were not of common use. For a time they were exclusively reserved for liturgical purposes. The comb was used to straighten and smooth out the surrounding hair of the early Bishops

of the Church about the "toussure". From this the origin of the "peignoir" originally a short gown put about the holy man's shoulders "Quand on le peignait. The priest demanded of God that the comb would "décrassait la tête et la nettoyait de ce qu'il y avait d'impur et de grossier le Saint Esprit, par sa grace divine daignat purifier le cœur de l'officiant et en ôter tout ce qu'il pouvait y avoir de contraire à la vertu."

In the time of Erasmus lousiness was the common lot—like the smallpox and rich and poor were alike infested but the poor scholars seemed to suffer more than anybody for Cabanès tells us that Erasmus was a victim when in Paris at Montagu College of the "pouillerie scolaistique," this college being, "the poorest, the most democratic of the university houses."

In his "Colloques" says Cabanès Erasmus makes one of his interlocutors say "Unde podis?" (Where do you come from?)

"E Collegio Montis Acuta." (From Montagu College.)

Ergo ades nobis onustus litteris?" (You have come back to us then full of literature?)

"Imo pediculis." (Much fuller of lice.)

Very truly yours

W.H. PEACOCK COURTS M.D.  
12 Monmouth Court, Brookline Mass.

#### ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago III  
January 3 1935.

Managing Editor

*The New England Journal of Medicine*,

In addition to the articles enumerated in our letter of November 20 the following have been accepted:

Grisard Laboratories

Chocolate Coated Tablets Scillonin 0.5 mg.

Lederle Laboratories Inc.

Diphtheria Toxin for Schick Test in Peptone Solution Fifty test package

Staphylococcus Toxoid

Eli Lilly & Co.

Ampoules Sodium Amytal 0.065 Gm. (1 grain)  
Tablets Amytal ½ grain

National Drug Company

Diluted Diphtheria Toxoid for Sensitivity Test,  
5 and 50 test packages

Winthrop Chemical Co. Inc.

Tablets Skiodan, 1 Gm.

The following products have been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N.N.R. (*New and Nonofficial Remedies* 1934, p. 443)

Lederle Laboratories Inc.

Quinidine Sulphate (Lederle)

\*Cabanès: *Mœurs intimes du Passé*, Paris, Librairie Albin Michel, 1908.

Capsules Quinidine Sulphate (Lederle) 3	
grains (0.2 Gm)	
Capsules Quinidine Sulphate (Lederle) 5	
grains (0.325 Gm)	

Yours sincerely,

PAUL NICHOLAS LEECH, *Secretary,*  
Council on Pharmacy and Chemistry

## RECENT DEATHS

**McKELVEY**—ALEXANDER DUNBAR MCKELVEY, M.D., of 160 Bloor Street West, Toronto, Ontario, Canada, a non resident member of the Massachusetts Medical Society, died January 6, 1935

He was born in 1885 and graduated in medicine from the University of Toronto Faculty of Medicine in 1908. He was also a Fellow of the American Medical Association

**BELLAMY**—WILLIAM WOOLSEY BELLAMY, M.D., of 36 Adams Street, Watertown, died at his home, January 17, 1935. He was born in Dorchester in 1887, the son of William and Anna (Johnson) Bellamy. After two years at Harvard College he entered the Harvard Medical School from which he graduated in 1902. He practiced for a time in Dorchester, but retired to take on the work of medical recorder for several societies.

He joined the Massachusetts Medical Society in 1904 and again in 1923, and was also a Fellow of the American Medical Association. He was employed for a time as stenographer to the Secretary of the Massachusetts Medical Society. His social contacts were especially in the Harvard, the University, and the Charles River Country Clubs.

He is survived by his widow, Mrs. Elsie (Stark) Bellamy; his father, two brothers, Robert of Dorchester and Albert of Jamaica Plain, and a sister, Miss Margaret B. Bellamy of Winthrop.

## OBITUARIES

### DR MALCOLM STORER

The death of Dr. Malcolm Storer on January 2, 1935, at the age of 72, removes from this community one of its kindly and trustworthy practitioners and one who, in his social and civic relations, was always a dependable personage. Those who were privileged to know him intimately were attracted by his personal charm, his broad interests, his effervescent humor and his felicity in conversation. The familiar way in which his intimates addressed him, preferring to call him "Mike" rather than Malcolm, was not, I fancy, because it was easier to say, but because it connoted certain of those attractive Celtic characteristics often associated with men of that nationality.

His early training was of a determining factor in

much that was significant in his later life. He spent some considerable time abroad with his father at a time when the acquisition of foreign languages was relatively easy, with the result that he was able to read and speak several European tongues readily and this was a great advantage to him personally and enabled him to serve the Boston Public Library's Committee for the selection of books on a good many occasions.

It was during his stay in Europe with his father, who was there for treatment of arthritis, that he formed an early interest in his father's hobby of numismatics, an interest that increased as he grew older and after his father's death he completed and edited the work that he began, publishing a large, single volume, descriptive catalogue of his very complete and valuable collection of medals. Recognition of his outstanding knowledge of this subject came through his appointment as curator of the collections of coins and medals at Harvard University, the Massachusetts Historical Society, the Boston Medical Library and the Boston Art Museum. He had served the Boston Numismatic Society as its Secretary and President.

Without ever neglecting any of the responsibilities in connection with such professional associations as he chose to accept, he was in a position to indulge in purely cultural tastes with which he was so largely endowed and which made him such a delightful companion as well as a very competent adviser in his various public associations. Such men are rare and when they are taken away their loss is felt by the entire community in which they lived. His pre-collegiate education was obtained in Germany, Italy, England, and Newport, Rhode Island. He graduated from Harvard University in 1885 and true to the family tradition, his father and grandfather both being doctors, he took a medical degree from Harvard University in 1889. His grandfather, Horatio Storer, had large real estate holdings in the Temple Place section of the Boston of his day and for many years his grandson had offices at 476 Boylston Street.

His hospital and teaching connections at Harvard Medical School were in the specialty of Gynecology.

Interest in the cultural aspects of his profession brought him to the service of the Boston Medical Library where he was a member of the Executive Committee for many years by virtue of his office of Curator of Medals. Among the numerous societies of which he was a member may be particularly mentioned the Massachusetts Historical Society and the Naval History Society.

During the World War he served for three years sending supplies to the French wounded and for Italian relief purposes. He was given the rank of Lieutenant in the Medical Reserve Corps.

In 1889 he married Miss Grace Ayrault of Geneva, New York. She, and a daughter, Mrs. Egerton B. Sawtelle, of Augusta, Maine, two brothers and a sister survive him.

**DR. JOHN NELSON COOLIDGE**

Dr John Nelson Coolidge died at his home in Ottawa, Ontario on January 9 1935 after a long illness. He was born in Leicester Mass October 23 1866 and graduated from Amherst College with the class of 1889 and after a year of teaching entered the Harvard Medical School graduating in 1894.

He served as medical house officer at the Boston City Hospital and began the practice of medicine in Boston in January 1895. He was particularly well suited for the care of ill people and won the confidence and devotion of his many patients.

For a few years he was an assistant in teaching Clinical Medicine in the Harvard Medical School. Later he became assistant in the Department of Theory and Practice at Tufts College Medical School resigning in 1910 when he was called to act as home office examiner of the Metropolitan Life Insurance Company in New York. He was made Assistant Medical Director in 1916. His association with the company began as an examiner in Boston in 1898.

In 1924 when the Canadian home office was established in Ottawa Dr Coolidge was selected as head of the medical division. In the summer of 1928 he was obliged to relinquish his duties on account of ill health. He will long be remembered by his friends here for his genial disposition his loyalty and devotion qualities which also won him many close and appreciative friends both professionally and socially during his short active life in the Canadian capital.

Dr Coolidge was a member of the Massachusetts Medical Society the American Medical Association the Royal Ottawa Golf Club and other societies.

He is survived by Mrs. Coolidge and a daughter Miss Marian Elizabeth Coolidge.

**RESOLUTIONS OF THE MIDDLESEX EAST DISTRICT MEDICAL SOCIETY ON THE DEATH OF GEORGE FARWELL DOW M.D.**

In Reading where he had practiced his beloved profession for nearly forty years Dr George Farwell Dow died December 9 1934.

Educated in the public schools at Andover Harvard College Harvard Medical School, and at the Boston City Hospital as Intern he returned to his home town and took up the practice of medicine where his father Dr John O Dow had served the community so well during the previous generation.

During the Spanish War he was Surgeon Major of the Old Sixth Massachusetts and later served in the Philippines. During the World War he was on the Draft Board and then served as Captain in the Medical Service.

As a physician he won the confidence and affection of those with whom he came in contact. Through unsparing of self honest humane he exemplified the "family physician" at his best, and it is worthy of note that the local paper headed its heartfelt tribute "Here was a man."

Doctor Dow had been a member of this Society

since 1897 serving in many offices and committees. He was also a Trustee of the John M. Harlow Fund.

The Middlesex East District Medical Society desires to inscribe on its permanent records its deep sense of loss in his death as well as its grateful appreciation of a good physician a wise counselor a genial loyal friend and a courteous gentleman. It is recommended that these resolutions be spread upon the records of the Society and that a copy be sent to his bereaved family with our sympathy.

(Signed)

RICHARD DUTTOY M.D.

E. D. RICHMOND M.D.

C. E. ORDWAY M.D.

**NOTICES****LECTURES AND CLINICS ON HEART DISEASE  
BY DR. CHRISTIAN**

Dr Henry A. Christian Horsey Professor of the Theory and Practice of Physic at the Harvard Medical School began a series of 13 lectures and clinics on heart disease at the Peter Bent Brigham Hospital on January 14. Three lectures of the series have already been given. Subsequent lectures are scheduled for the following dates January 31 at 3:30 P.M., January 31 at 3:30 P.M., February 7 at 8:30 A.M. and 3:30 P.M., February 14 at 8:30 A.M. and 3:30 P.M., February 21 at 8:30 A.M. and 3:30 P.M. and February 25 at 8:30 A.M. Note that the afternoon exercises are scheduled for 3:30 P.M. instead of 4:30 P.M., as previously announced. Physicians are cordially invited.

The subjects discussed will be the following:

- 1 Physiology of heart in relation to normal and abnormal cardiac function.
- 2 Symptoms and signs of cardiac disease varieties of heart disease and their diagnoses.
- 3 Treatment of cardiac insufficiency with discussion of pharmacological action of chief therapeutic agents used.
- 4 Special forms of heart disease angina pectoris and coronary occlusion.
- 5 Special forms of heart disease (continued) chronic non-valvular heart disease including effects on heart of arteriosclerosis and of hypertension.
- 6 Special forms of heart disease (continued) chronic valvular heart disease syphilitic heart disease.
- 7 Special forms of heart disease (continued) acute endocarditis acute and chronic pericarditis.

**UNITED STATES CIVIL SERVICE EXAMINATION**

The United States Civil Service Commission has announced an open competitive examination as follows:

Junior Medical Officer (Intern)

St. Elizabeths Hospital Washington D.C.

Applications for the position of Junior Medical Officer (Intern) at St. Elizabeths Hospital, Wash-

In the first or nephrotic type the patients are always in a positive nitrogen and sulphur balance and the excretion of these two elements is in the ratio of from 20 to 30 to one, there being a marked retention of sulphur. In the glomerular type of kidney disease the nitrogen sulphur ratio is below normal, often being as low as ten to one.

The protein precipitated from the urine in patients with the nephrotic syndrome contains only six hundredths of one per cent of sulphur or a protein-sulphur ratio equal to 259. This determination was checked on the dried protein and by dialysis and was found to be correct. The results were obtained by subtracting the determinations on the filtrate after precipitation from those on the whole urine as voided.

Doctor Grabfield then discussed the nitrogen-sulphur ratios in various conditions. In hyperglobulinemia it is 13, in cardiac edema 16 to 18, in the toxemia of pregnancy 16 to 18, in mercury poisoning which affects the tubules it is 10. The nephrotic type of kidney disease was the only condition studied in which the ratio was very definitely high, often being over 100.

When urea is fed to the nephrotic patient, the urea excretion rises and the sulphur excretion is distinctly diminished, while in glomerular types of nephritis the administration of urea has no effect on the nitrogen sulphur ratio.

Dr D McK Rioch spoke on "Certain Cortico-Thalamic Relationships Observed in Decorticate Cats." He briefly reviewed the clinical effects of such operations. All showed sham rage on handling. Microscopic slides through the central thalamic region of the four cats were shown. There was an extraordinary degeneration of the thalamus with a complete dropping out of the ganglion cells as well as the ventral and lateral thalamic nuclei. The nucleus reticularis was preserved, indicating that there are descending fibres and an efferent function of the thalamus. The hypothalamus was well preserved.

The lateral geniculate probably sends fibres to the thalamus as well as to the cortex and possibly to the mesencephalon. The cortex and thalamus are essentially one functional system, so that lesions of the cortex cause degeneration of the thalamus and vice versa.

Dr N F Conant spoke on "The Dermatophytes." These are parasitic fungi which present different characteristics when cultured on artificial media than they do in the skin lesions. Numerous slides of the different types were shown. The trichophyton attack the hair, trichophyton endothrix forming spores in chains entirely within the hair shaft, while trichophyton ectothrix forms spores in chains both within and without the hair shaft in parallel arrangement. These types do not mix in the same patient. The spores in artificial media such as cereal grain and water or polished boiled rice may be blunt at both ends and multicellular. In another type there may be cup-shaped lesions all over the body in which

a hair shaft forms the center and the hair shows large air spaces in the shaft.

The epidermophyton often gives inguinal lesions in which the scrotum is frequently involved. In this type there are clusters of multicellular macrospores which are club-shaped and which are attached in sessile fashion. In the microsporon infection there is usually a "ringworm" effect with an active border and a quiet center. A grey, heavy sheath is formed around the hair and the arrangement of the spores is like a mosaic. The different types of microsporon spores were described.

There are two aspects to these fungi: first, the parasitic, and secondly, the saprophytic which is best seen in artificial culture media. The difficulty of establishing effective treatment varies considerably with the different species. In the types attacking the hair, epilation is necessary.

#### NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

A meeting of the New England Ophthalmological Society was held December 18, 1934 at the Massachusetts Eye and Ear Infirmary. After the business meeting, Dr E B Dunphy presented a case of intermittent exophthalmos in a boy of nineteen. For the past year whenever this patient has exerted himself or lain on his left side, his left eye has become more prominent. Physical examination was essentially negative except for a definite exophthalmos on the left side which was compensated for when any of a series of procedures to raise the venous pressure was carried out. Thus bilateral jugular compression caused the compensatory exophthalmos while unilateral compression did not. In the four autopsies on the sixty reported cases of this condition, varicose veins of the orbit were found in all. The condition is probably congenital.

Dr William D Rowland then presented two cases of hysterical blindness. The first case was that of an eighteen year old college girl who suddenly became totally blind after a slight kick in the side of the head while watching a gymnastic stunt. Her sight returned nine days after the accident. The second case was that of a thirty five year old Italian laborer who suddenly became blind after a seven foot fall in 1929. By all the ordinary tests he was totally blind, had a ptosis of the lids, was unable to open or close his lids, and slept with his eyes open. After many negative physical examinations, he was advised to return to Italy in 1931 where he slowly and completely recovered his sight.

Dr Henry M Emmons spoke on "The Development of the Organ of Vision from Its Lowest Form up to the Eye of the Primates." After a brief discussion of the principles of life and protoplasm and the possibility of a law governing the rhythmic changes of the protoplasmic colloids, Dr Emmons began the main part of his lecture by pointing out that we can see only one out of the fifty five octaves of light.

In many of the protozoa and metazoa light sensitivity is a property of the body as a whole, while

It is only in the higher animals that there are specialized cells connected by nerves to the central nervous system. This sense is most complicated in man. Fossil remains reveal the fact that in this complex evolution higher efficiency has been secured by increased size on the one hand and specialization of cells on the other.

The most primitive organ of sight is perhaps the rod-shaped structure in certain body surface cells which is stimulated by certain light waves. These "visual rods" may be scattered over the body surface or grouped to form primitive eyes. The surface layer of some animals contains other light sensitive cells. Pigment is usually found in visual cells. The function of an eye is first, to appreciate the intensity of the light; secondly to determine the relative position of the light; and thirdly to perceive images.

In certain of the lower animals in particular the crustaceans the visual cells secrete a protective covering for the eye consisting of chitinous colorless material which also acts as a cornea and lens. The eye spot of the mollusc is the simplest type and consists of a series of long columnar cells with collections of pigment distally and an overlying transparent thickening which acts as a lens. The next step in the evolutionary development of the eye is seen in the starfishes where a second type of cell serves as a supporting structure. In these forms of life the light perceiving cells are connected to prolonged nerve fibers and in certain species the eye is a cup-like hollow lined by pigmented visual cells and supporting a flat lens.

Planarians have single eye cells with one drawn out nervous connection and they are usually sunk below the surface without a lens. In some of the urchins there are a number of visual units each of which has a pigment cup at its proximal end and a cap of several cuboidal cells.

As we go up the animal scale there are three stages through which one passes to arrive at true vision. The first of these phototropism, is purely protective and causes the animal to move as a whole toward or away from light. The second stage is sensation and the third is specific sensation in which light is recognized as such by the animal.

The cup-shaped eyes of some of the lower animals have a narrow opening which in a slightly higher stage becomes closed and covered with a surface epithelium as in spiders. Many of the crustacea have compound eyes made up of numerous units each of which is a complete eye. There are three stages in the development of the vertebrate eye: first, the development of the surface ectoderm; secondly the eye sinks down to lie next to the medullary canal; and thirdly the eye grows out again to take up a surface position.

Dr. Emmons closed his talk by pointing out certain interesting facts: there is no movement of the eyes of invertebrates; all fishes are color blind; snakes can see only objects in motion; birds have a

visual acuity one hundred times that of man; there is no stereoscopic vision below the apes; there is a nictitating membrane in man and the cat family except the larger species have vertical pupils.

Dr. A. S. Bogg briefly discussed the paper and pointed out that there is no definite rule to follow in the evolutionary development of the eye there being very complex eyes in certain invertebrates and very simple eyes in some of the vertebrates. Evolution in this respect represents a series of natural experiments with certain features common to all. He spoke on the development of the cerebral eye. Embryonically it is associated with the neural crest, being represented by a pituiting at the anterior end of this crest. Later an evagination takes place to form the eye bud and the surface is indented to show where the optic cup will be. In the seven millimeter embryo the lens vesicle is closed off, the optic cup is inverted, the lens pushed back from the surface nerve fibers develop and the retina with its pigment cells is formed. The bud carries with it cells that later become sensory cells others that become supporting cells while the outer layer of the cup forms the pigment cells.

#### BOSTON CITY HOSPITAL SURGICAL CLINIC

Surgical Clinic Boston City Hospital, Friday February 1 12 M, in the Cheever amphitheatre.

Dr. William R. Morrison Associate Professor of Surgery Boston University School of Medicine will present

- 1 A case of perforated ulcer of stomach.
- \* A case of aneurysm of axillary artery and aneurysm of the thoracic aorta.
- 3 In addition certain acute surgical cases will be presented for discussion.

Physicians and medical students are invited

#### NEW ENGLAND DERMATOLOGICAL SOCIETY

The next meeting of the New England Dermatological Society will be held on Wednesday February 13 at 3 P.M. at the Massachusetts General Hospital.  
J. HARPER BLAISDELL, M.D., Secretary

#### SOCIETY MEETINGS CONGRESSES AND CONFERENCES

##### CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY JANUARY 22, 1935

Monday January 22—  
8:15 P.M. New England Heart Association. Beth Israel Hospital, Boston.

Tuesday January 23—  
1:30 P.M. Radio Program. WEEI. Water Purification.  
1:30-4 P.M. Ward visit Massachusetts Eye and Ear Infirmary.  
4:15 P.M. Seminar. Pediatric Laboratory. Massachusetts General Hospital.  
4:30 P.M. Radio Program. WBZ. "Stomach and Duodenal Ulcers."

Thursday January 25—  
1. M. Clinico-Pathological Conference. Massachusetts General Hospital.  
1. M. Clinico-Pathological Conference. Children's Hospital.

\*3 30 P.M. Medical Clinic. Dr Christian Peter Bent  
Brigham Hospital  
†4 30 P.M. Surgical Clinic Children's Hospital  
Amphitheatre

**Friday, February 1—**

†12 M. Clinical Meeting of Children's Medical Staff,  
Massachusetts General Hospital. Ether Dome  
\*12-1 P.M. Boston City Hospital. Surgical Clinic.  
Cheever Amphitheatre  
5 00 P.M. Radio Program WEEI, 'Pasteurization  
of Milk. Protection of Ice Cream'

**Saturday, February 2—**

\*10-12 Medical Staff Rounds Dr Christian Peter  
Bent Brigham Hospital

\*Open to the medical profession  
†Open to Fellows of the Massachusetts Medical Society

January 25 and 26—New England Roentgen Ray Society  
See page 133, issue of January 17

January 28—New England Heart Association will meet  
at the Beth Israel Hospital Boston, at 8 15 P.M.

January 31—Clinic at the Peter Bent Brigham Hospital.  
See page 176

February 1—Boston City Hospital Surgical Clinic. See  
page 179

February 8—William Harvey Society Dr Arthur M.  
Fishberg, New York City, will speak on "Peripheral Vas-  
cular Collapse"

#### MASSACHUSETTS DIETETIC ASSOCIATION

February 12—Tuesday, 8 P.M. "Diabetic Children,"  
Dr Priscilla White, Joslin Diabetic Unit.

March 12—Tuesday 8 P.M. "The Effect of Diet on  
Anemia" Dr Lewis Diamond, Instructor in Medicine,  
Harvard University Medical School, Associate Physician,  
Children's Hospital.

March 19—Tuesday 2 P.M. Field Trip Visit Store-  
house First National Stores

April 9—Tuesday, 8 P.M. "Small Hospital Problems,"  
Miss Margaret Copeland, Superintendent, Free Hospital  
for Women

February 13—New England Dermatological Society See  
page 179

February 20—Brookfield Medical Club See page 176

March 11, 12, 13—Surgeons to meet in Jacksonville,  
Florida. (Southeastern Surgical Congress) See page 83,  
issue of January 10

April 29 May 3, 1935—The American College of Physi-  
cians will meet at Philadelphia. For information address  
Mr E. R. Loveland Executive Secretary, 133-135 South  
36th Street, Philadelphia, Pa

June, 1935—Medical Library Association will meet in  
Rochester, N.Y. For details address the Secretary  
Miss Frances N. A. Whitman, Librarian Harvard Uni-  
versity Schools of Medicine and Public Health, Boston,  
Mass

#### DISTRICT MEDICAL SOCIETIES

##### ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Annual Meeting will be held in May Time, place  
and subject to be announced

E S BAGNALL, M.D., Secretary

##### FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March  
and May at the Weldon Hotel, Greenfield, Mass

CHARLES MOLINE, M.D., Secretary

Sunderland.

##### MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

March 13, 1935—Wakefield

May 8, 1935—Winchester

K. L. MACLACHLAN, M.D., Secretary

1 Bellevue Street, Melrose

##### NORFOLK DISTRICT MEDICAL SOCIETY

January 29, 1935—Hotel Kenmore, 8 P.M. The Com-  
pression Treatment of Tuberculosis, Including Pneumo-  
thorax Phrenicectomy and Thoracoplasty Drs Richard  
H. Overholst N. R. Pillsbury and Hugh Hare

February 26, 1935—Hotel Kenmore, 8 P.M. The Use  
of Amniotic Fluid in Abdominal Surgery Dr Herbert L.  
Johnson

March 26, 1935—Fernald School for Feeble-Minded,  
Waverley Details to be announced

May, 1935—Annual Meeting Date time and place to be  
announced

##### PLYMOUTH DISTRICT MEDICAL SOCIETY

March—Plymouth County Hospital

April—Lakeville Sanatorium

#### SUFFOLK DISTRICT MEDICAL SOCIETY

March 27, 1935—Clinical Meeting at the Boston Lying-In  
Hospital

April 24, 1935—Clinical Meeting at the Children's Hos-  
pital

The medical profession is cordially invited to attend  
all of these meetings

ROBERT L DeNORMANDIE M.D., President.  
GEORGE P REYNOLDS, M.D., Secretary

#### WORCESTER DISTRICT MEDICAL SOCIETY

February 13, 1935—Wednesday evening Worcester State  
Hospital, Worcester, Mass 6 30 P.M. Dinner 7 30 P.M.  
Scientific program and business session. Announcement  
of subjects and speakers to be presented at a later date  
Dinner complimentary by the Hospital.

March 13, 1935—Wednesday evening The Memorial  
Hospital Worcester, Mass 6 30 P.M. Buffet supper  
7 30 P.M. Scientific program and business session. An-  
nouncement of subjects and speakers to be presented  
at a later date Buffet supper complimentary by the  
Hospital.

April 10, 1935—Wednesday evening Worcester Hahne-  
mann Hospital, Worcester, Mass 6 30 P.M. Dinner  
7 30 P.M. Scientific program and business session. An-  
nouncement of subjects and speakers to be presented  
at a later date Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening An-  
nual Meeting of the Worcester District Medical Society  
The time and place of this meeting will be announced  
later

ERWIN C MILLER, M.D., Secretary

27 Elm Street, Worcester

#### BOOKS RECEIVED FOR REVIEW

**Sculpture in the Living** Jacques W Maliniak 203  
pp New York The Lancet Press \$3 00

**The Vitamin B Requirement of Man** George R.  
Cowgill 261 pp New Haven Yale University  
Press \$4 00

**Surgical Applied Anatomy** Sir Frederick Treves  
Ninth Edition, Revised by C C Choyce Illustrated.  
720 pp Philadelphia Lea & Febiger \$4 00

**An Atlas of the Commoner Skin Diseases** Henry  
C G Semon and Arnold Moritz 221 pp Baltimore  
William Wood & Company \$12 00

**How Safe Is Home?** Howard Whipple Green. 48  
pp Cleveland Cleveland Health Council 50 cents

**Body Mechanics in the Study and Treatment of  
Disease** Joel E Goldthwait, Lloyd T Brown,  
Loring T Swaim, and John G Kuhns 281 pp Phila-  
delphia J B Lippincott Company \$4 00

**A Truth-telling Manual and the Art of Worldly Wis-  
dom** Being a collection of the aphorisms which ap-  
pear in the works of Baltasar Gracian Translated by  
Martin Fischer 287 pp Springfield Charles C  
Thomas \$3 00

**Anaesthesia and Analgesia in Labour** Katharine  
G Lloyd-Williams 96 pp Baltimore William Wood  
& Company \$2 00

**The Treatment of Common Female Ailments**  
Frederick John McCann Third Edition 379 pp  
Baltimore William Wood & Company \$4 75

**Studies from The Rockefeller Institute for Medical  
Research Reprints Volume 91** 598 pp New York  
The Rockefeller Institute for Medical Research,  
1934

**The Management of Fractures, Dislocations, and  
Sprains** John Albert Key, and H Earle Conwell  
1165 Illustrations 1164 pp St Louis The C V  
Mosby Company \$15 00

## BOOK REVIEWS

**Human Sterility Causation, Diagnosis, and Treatment.** By Samuel Raynor Meeker 27 illustrations 276 pp Baltimore The Williams & Wilkins Company \$4.00

This is a book for the specialist and one that will repay his careful study. It is the eighth in a series on the Medical Aspects of Human Fertility sponsored by the National Committee on Maternal Health Inc. The contents are well arranged and the method of presentation clear. Etiology and diagnosis are well treated. These two parts which also include a discussion of endocrinologic investigations as a part of the general diagnostic procedure comprise 204 of the 276 pages. The section on treatment (forty-one pages) is disappointingly brief that on the results of treatment (eleven pages) very meager indeed. Some bare statistics are given but unfortunately these are not correlated with the statistics given in the section on etiology. The value of the methods of study and of the treatment advocated cannot therefore be evaluated from any data given in the text. A good working bibliography is appended. The book is interesting and well worth reading but after all it said merely represents the opinions and practice of one small group of collaborators. It is not the comprehensive compilation which we might have expected from the National Committee on Maternal Health.

**Diagnostic Clinique Examens et Symptomes.** Par A. Martinet et collaborateurs 1138 pp Sixième Édition Entièrement Refondue. Paris Masson et Cie. 145 fr

The necessity of a sixth edition of this book emphasizes more than the reviewer can describe in words the interest and appreciation of the profession in a well-coordinated, well written, and comprehensive treatise on clinical diagnosis.

Many additions to the fifth edition, which was published in 1926 have been made. Bronchoscopy and gastroscopy are described and discussed. New procedures such as the visualization of the biliary tract, arteries, and spleen are adequately and thoroughly treated. Many chapters such as the examination of the intrathoracic tract, diagnostic procedures in gastric diseases, heart, electrocardiography and blood dyscrasias have been completely revised. Genitourinary diseases are fully recorded.

The collaborators have retained the original plan of the book. Part one is devoted to generalities on diagnosis, errors in diagnosis and how to go about doing a complete medical examination. Part two encompasses the entire field of special examinations such as those relating to the eye, digestive tract, heart, lungs, blood, genitourinary tract and nervous system. The second half of the book discusses symptoms under headings such as adenopathy, ascites, edema, icterus, cough and many others.

This edition has 1154 pages and is well illustrated.

It is unquestionably one of the best French medical books published and its usefulness should be unlimited. The treatise is highly recommended.

**Cataract. Its Etiology and Treatment.** By Clyde A. Clapp 254 pp Philadelphia Lea & Febiger \$4.00

Lacking direct blood and nerve supply the crystal line lens is considered to be susceptible only to degenerative changes designated as cataract, which constitutes one of the major problems in ophthalmology. During the past twenty years the slit lamp and binocular microscope have thrown more light upon the growth and development and the degenerative changes of the crystalline lens than the combined studies of all preceding time. Biophysicists and biochemists are now delving into the peculiar metabolism of the crystalline lens, to explain the manner in which it maintains transparency meets its nutritional and oxygen requirements fulfills its accommodative function and acts as a selective light filter.

Dr Clapp's text is timely well written amply illustrated and carries 666 references to important contributions on the subject. The first half of the book gives an excellent résumé of the known embryology anatomy physiology chemistry and degenerations of the lens and the second half contains a concise summary of the medical and surgical treatment of cataract and of postoperative complications.

The book deserves a place on the desk and in the attention of every practicing ophthalmologist.

**The Practice of Dietetics.** L. H. Newburgh and Frances MacKinnon. 264 pp New York The Macmillan Company \$4.00

This is not merely a collection of menus but rather a presentation of methods for deciding whether and how disease may be ameliorated by diet. The subject is divided into three parts. The first deals with the material needs of the organism referring especially to the structural substances, protein and inorganic substances the sources of energy and the regulating substances. The second part is concerned with the selection of food. In the third part therapy by means of diet is presented.

The authors feel that pure protein are harmless but that since nucleic acid and certain non protein meat extractives will produce contracted kidneys experimentally the amount of protein fed in the form of meat is of significance. The selection of proteins for their content of specific amino acids is presented.

The energy exchange of man depends upon the ingestion of potential energy in the form of food. Excessive ingestion of food energy does not increase the transformation of energy but results in storage of potential energy as fat, with resultant unfavorable effect upon mortality rates.

The authors present a method of calculating the twenty four hour energy production from carbohy-

drate, protein and fat by utilizing measurements of the insensible perspiration.

Under the regulatory substances, the major part of the discussion is given to Vitamin D and the calcium phosphorus exchange

In the Table of Nutritive Value of Foods are included many of the analyses of Lawrence and McCance. The latter attempted to eliminate both cellulose and hemi-cellulose from the final results and obtained figures for "available carbohydrate" in vegetables, fruit and nuts. One objection to their figures is that they examined only six samples of the various foods and it is not stated that the foods were gathered from widely separated regions. The values for carbohydrate, therefore, in some foods, apples, for example, are as much as 50 per cent lower than values previously used. However, the tables have the additional advantage of giving the values for calcium, phosphorus and iron, the relative content of each vitamin and their acid or basic reaction in terms of N/10 HCl.

Newburgh and Mackinnon review the observations upon the metabolism of fasting and undernutrition in diabetes which led to Newburgh's adoption of the low carbohydrate and protein with high fat diet. The publication of these diets in 1923 liberalized the caloric values of diabetic diets generally, but the use of diets containing from 20 to 100 grams carbohydrate nowadays seems at least out of harmony with general practise. Curiously enough, in the severest cases of diabetes, diets of the liberal carbohydrate type are employed to produce hyperglycemia and avoid insulin reactions. This procedure is recommended on the ground that in such cases, all tolerance has been lost anyway, and hyperglycemia does no harm except to reduce tolerance. It has been generally observed that the fatal or crippling complications of diabetes such as carbuncles, infections of the urinary tract, and cataracts occur even in the young with greatest frequency where hyperglycemia is least well controlled.

The authors' statements regarding arteriosclerosis in diabetes are more sweeping than the data available at present should permit. They state that diabetic gangrene is due solely to medial arteriosclerosis, and that this is never produced by means of cholesterol feeding. Medial sclerosis occurs in both diabetics and non diabetics. The case should rest on pathologic data and more than one pathologist has noted the predominance of the initial atherosclerosis in arteries of diabetic legs.

Treatment of coma is given but slight mention. Twenty units of insulin injected at six hourly intervals seems a dangerous rule to promulgate. It can only mean that the authors have had little personal experience in treating coma, and, in fact, the reviewer does not know of any large series of coma cases reported from their department at the University of Michigan. Altogether the book will be found stimulating and informative in spite of certain glaring inequalities.

**Manual of the Diseases of the Eye For Students and Practitioners** By Charles H May Fourteenth Edition, Revised 496 pp Baltimore William Wood and Company \$4.00

The fourteenth edition of Dr May's Manual presents much useful information within its 496 pages, and its 376 illustrations many of which are in color. The utility of the book is greatly enhanced by the addition of Dr Dunnington's chapter on disturbances of ocular motility. The work is valuable as a clinical manual for the beginner.

Ophthalmology is no longer a separate science, or empirical. Yearly it is being recognized that the practitioner who treats eye conditions must widen his knowledge of physics, chemistry, biology, and of clinical medicine in general. To interpret the lesions one finds, and to treat disease intelligently, one must correlate the clinical with the fundamental. Nowadays, even in a manual, one is disappointed if one does not find with each clinical entity descriptions dealing with histopathology, with biochemistry, with the latest advances in bacteriology, and with slit-lamp microscopy.

**Medical Art Calendar, 1935** The Hague J Philip Kruseman \$2.00

This calendar, of a good deal of interest to doctors, upholds the standard set in previous years. The reproductions of noted paintings are very well done in brown and most of the material is of distinct medical interest.

**Rules for Recovery from Pulmonary Tuberculosis.** Lawrason Brown. Sixth Edition, thoroughly revised 275 pp Philadelphia Lea & Febiger \$1.75

The mere fact that this book of Dr Lawrason Brown's has reached a sixth edition speaks for itself. Several new chapters have been added including one on the surgical treatment of tuberculosis with remarks on the vitamins, alcohol, tobacco, immunization and rehabilitation. There are 250 pages of rather fine print and there is no doubt but that all the information that any patient may need is contained in this little volume. To the reviewer, at least, the only possible criticism that can be made of Dr Brown's book is that it contains almost too much information and that in too detailed and technical language. It is to be doubted as to whether it is beneficial for the average patient to make too careful a study of the number of calories that he consumes each day or the exact kind and variety of the vitamins contained in his food. The reviewer accustomed to reading all books of this sort must admit that he finds this one distinctly hard reading. Perhaps if he were a patient and had unlimited time at his disposal it would be easier.

Despite this very minor criticism, however, the book stands for all that is worth while in the treatment of this disease and is bound to increase steadily in usefulness.

# The New England Journal of Medicine

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NUMBER 5

## NEW ENGLAND SURGICAL SOCIETY

### THE ASSOCIATION OF PYLEPHLEBITIS AND APPENDICITIS\*

BY WILLIAM H. SNEDER, M.D. † MARSHALL C. HALL, M.D. † AND ARTHUR W. ALLEN, M.D. †

THE purpose of this study is to investigate the events leading to the development of pylephlebitis from appendicitis and to present a clinical study of twenty seven such cases. Recent cases of acute appendicitis in which there were severe chills led us to make this analysis. The sources of our information are as follows:

- (1) The clinical and pathological record of twenty seven cases of pylephlebitis and liver abscess following appendicitis. These occurred in 8969 cases of appendicitis treated in the Massachusetts General Hospital from 1900 to 1934.
- (2) The clinical records of the last 1791 cases of acute appendicitis and twenty four cases of appendicitis having chills.

Pylephlebitis, as it is generally considered, is an inflammatory or purulent process involving the portal system of veins and may arise from any infection drained by this system. Our work has been limited to a study of the condition when the appendix is the source. Phlebitic involvement of the veins of the portal radicles may initiate a liver abscess and then subside so that at operation or at autopsy the pathway of the infection cannot be traced. Liver abscess may also develop after appendicitis through the lymphatic system or by direct extension as described by Munro<sup>27</sup>, Braithwaite<sup>4</sup>, and Koerte<sup>9</sup>.

#### DEVELOPMENT OF PYLEPHLEBITIS FROM APPENDICITIS

(1) Individuals who develop pylephlebitis following appendicitis frequently have chills during the early stages of the attack. This was true in forty per cent of our cases. This fact has been noted by many observers. Gersäter<sup>14</sup>, Eliason<sup>12</sup>, Melchior<sup>14</sup>, Colp<sup>11</sup> and others. According to the records, thirty-eight out of 1791 recent cases of acute appendicitis treated in the Massachusetts General Hospital had chills. In other words about 21 per cent of the general run of our patients with acute ap-

pendicitis have chills. Kelly<sup>10</sup> in his book on appendicitis published in 1905 gives the incidence of chills as fifteen per cent and Colp<sup>12</sup> (1927) found it to be 6.8 per cent in 2341 cases studied at the Mt. Sinai Hospital (Table I).

TABLE I  
CASES OF APPENDICITIS WITH CHILLS DURING FIRST FEW DAYS OF THE DISEASE

Uncomplicated	
Kelly—1904	15%
Colp—1926	6.8%
Our Series—1934	21%
Developing Pylephlebitis	
Our Series (27 cases)	40%

This suggests that the ratio of chills to appendicitis may be decreasing as earlier diagnosis and operation will tend to lower the incidence.

(2) Cases of appendicitis which develop pylephlebitis are usually neglected cases or those in which the appendix is not removed early. Gersäter<sup>14</sup>, Colp<sup>11</sup>, Eliason<sup>12</sup> and others have made this observation. In our series of twenty seven cases of appendicitis which later developed pylephlebitis, eight cases or 29.6 per cent had no operation on the appendix itself. This may be explained by the fact that the early symptoms and signs of appendicitis were overshadowed by the more serious manifestations of pylephlebitis that were developing by the time the patient was admitted to the hospital. In some cases, the history of the onset would seem to obscure the diagnosis. Others were obviously so ill that even if the original focus was suspected it may have been felt useless to remove it. Certainly in some instances the diagnosis of appendicitis was not made until autopsy or late operation revealed the true state of affairs. Of those operated upon for appendicitis, the average time after the onset of symptoms of appendicitis before operation was performed was 7.7 days, the shortest time two days, and the longest time fourteen days. (Table II).

(3) Cases of appendicitis which develop pylephlebitis usually have a gangrenous or badly inflamed appendix at operation. Sixteen of the

\* From the Surgical and Pathological Departments of the Massachusetts General Hospital.  
† Real before the New England Surgical Society. No. 11 at a meeting of the New England Surgical Society, Boston, Mass., September 1, 1934.

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nineteen cases in our series (84 per cent) which were operated upon had an appendix described as gangrenous or with abscess. Two cases (11 per cent) were acute and one was chronic (Table III).

TABLE II

DURATION OF SYMPTOMS OF APPENDICITIS BEFORE APPENDECTOMY IN CASES OF PYLEPHLEBITIS

Days	Number of Cases
1	0
2	1
3	5
4 to 7	5
8 to 14	6

TABLE III

SYMPTOMS AND SIGNS IN 27 CASES OF PYLEPHLEBITIS

	Present	Absent
Precipitous Chills	27	0
Chills	25	2
Tender, Painful Liver	20	7
Nausea and Vomiting	14	13
Enlarged Liver	12	15
Jaundice	12	15
Limited Movement of Diaphragm by X ray	11	1

(4) At operation obvious thrombosis of the vein leading from the appendix has been described but once in our series of nineteen operative cases of appendicitis which developed pylephlebitis. It is probable that a thrombosis could have been detected in many of the other cases, but was not mentioned in the surgeon's notes. Furthermore, in the entire series of 8,969 cases of acute appendicitis, thrombosis of the veins leading from the appendix was mentioned but twice.

(5) Histological studies after the appendix has been removed have not enabled our pathological department to predict a single case of developing pylephlebitis. Beginning thrombosis in the veins of the appendix and its mesentery is the condition which we would expect to find in a developing pylephlebitis. The method by which thrombosis takes place has been explained in various ways by Virchow<sup>30</sup>, Ochsner<sup>31</sup> and Koester<sup>32</sup>, Gerster<sup>33</sup> and Thalhimer<sup>34</sup>. The latter felt that all cases of appendicitis should be examined for thrombosis in the veins of the mesentery so that where it occurred these veins could be excised or ligated. Sonnenburg<sup>35</sup> states that thrombosis occurs in the appendiceal veins in all cases of acute appendicitis. It is common surgical knowledge that in many cases of gangrenous appendicitis there is little or no bleeding when the mesentery of the appendix is cut and therefore the vessels must be occluded. That this obstruction of the vessels represents a true thrombosis is an academic point but an important one if we predict an

incipient pylephlebitis on this basis, as suggested by Thalhimer<sup>34</sup>.

In order to shed some light on this subject, we examined the sections on 100 consecutive cases of acute appendicitis, many of which were gangrenous, with the idea in mind of determining the number which showed thrombosis of the mesenteric veins. We based the histological evidence of thrombosis on the usual criterion of the presence of fibrin, red cells, and platelets. Somewhat to our surprise, the results were as follows:

- (a) No case showed changes suggestive of thrombosis.
- (b) Ten per cent showed at least one mesenteric vein to be filled with polymorphonuclear leukocytes.
- (c) Thirty per cent showed polymorphonuclear leukocytes invading the walls of the veins, the lumen remaining comparatively free.
- (d) Sixty per cent showed no leukocytic involvement of the mesenteric veins.

We then examined the sections on twenty-three cases giving a history of chills, (Plates I and II) and found the results almost identical



PLATE I Showing polymorphonuclear infiltration in the wall of a vein in the mesentery of the appendix in a case of acute appendicitis with chills. Cases without chills and our case of appendicitis which developed pylephlebitis had similar pathology.

with the cases picked at random. This was followed by the examination of the sections on one case (the only one available) of acute appendicitis which later developed pylephlebitis and it was found that the mesenteric veins were full of polymorphonuclear leukocytes but showed no evidence of thrombosis.

This study suggests that the presence of histological evidence of thrombosis of the mesenteric veins of surgical specimens is not of com-

mon occurrence but that evidence of plugging of the veins with septic material occurs in ten per cent of the general run of cases with acute appendicitis. We furthermore can find no way of determining a developing pylephlebitis from appendicitis by a histological study of the surgical specimen. We are aware of the

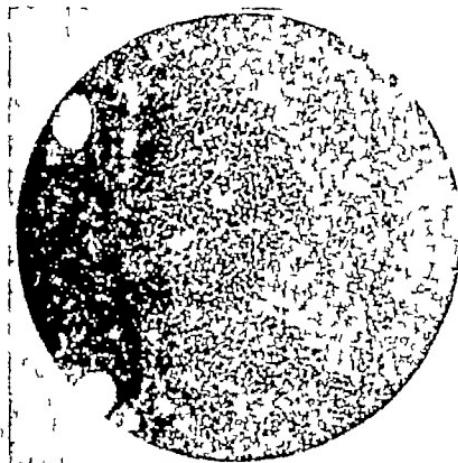


PLATE II. Showing polymorphonuclear infiltration within the lumen of a vein in the mesentery of the appendix in a case of acute appendicitis with chills. Cases without chills and cases of appendicitis which developed pylephlebitis had similar pathology. Elastic tissue stain differentiated this vein from a lymphatic.

fact that the pathologist must make his deductions from the material when it comes to him and that the findings may be quite different at other stages of the disease.

(6) Lows and Rosenow<sup>22</sup> felt that they had isolated a specific strain of bacteria in cases of primary thrombophlebitis of the portal veins which could be transferred to rabbits and in

dix is found, and in which there is clinical evidence of thrombosis of the appendiceal veins.

*Incidence of Pylephlebitis Following Appendicitis.* In the 8969 cases of acute appendicitis treated at the Massachusetts General Hospital in the years 1900-1933 there have been twenty-seven cases of pylephlebitis. This gives an incidence in our series of 3 per cent or one case of pylephlebitis in every three hundred cases of acute appendicitis. The average incidence in published clinical reports is 45 per cent. (Table V.)

TABLE V

A COMPILATION OF THE INCIDENCE OF PYLEPHLEBITIS FOLLOWING ACUTE APPENDICITIS AS GIVEN BY DIFFERENT INVESTIGATORS

	Cases	Pyle- phle- bitis	Per Cent	Aver- age Per Cent
<i>From Autopsy</i>				
E. Armstrong <sup>1</sup>	63	5	7.8	60
R. Fitz <sup>2</sup>	257	11	4.3	
<i>From Clinical Findings</i>				
A. Gerster <sup>3</sup>	1180	9	7.5	45
Petrán <sup>4</sup>	2779	15	5.4	
Stillman <sup>5</sup>	546	3	.44	
Brutt <sup>6</sup>	500	15	31	
A. Moschowitz <sup>7</sup>	1533	7	4.5	
Clairmont and Meyer <sup>8</sup>	1000	8.3	8.2	
E. Ellison <sup>9</sup>	2327	3	1.3	
R. Colp <sup>10</sup>	2841	9	3.2	
A. Otschkin <sup>11</sup>	1692	15	8.8	
Massachusetts General Hospital Series	8969	27	.30	

*Sex.* In our series there were twenty-one males and six females. This is in accord with the cases reported in the literature and is probably the result of the preponderance of cases of acute appendicitis in the male.

*Diagnosis.* The diagnosis of the typical case of pylephlebitis is not difficult. Bryant<sup>12</sup> summarizes the clinical aspects as follows: "Pyrexia, rigors, sweating, rapid pulse, abdominal pain, and tenderness in the right hypochondriac and the epigastric region together with uniform enlargement of the liver and tenderness of that organ especially if associated with or following any ulcerative lesion of the alimentary tract below the esophagus should suggest the possibility of suppurative pylephlebitis."

From our own studies we believe that in order to make a diagnosis of pylephlebitis one must have (1) A very ill patient, who is running an elevated temperature with a marked leukocytosis, and is otherwise obviously septic. (2) Nearly always a history of chills in the past or present. (3) A history of antecedent infection in the abdomen. The liver is frequently

TABLE IV  
WHITE BLOOD COUNT IN CASES  
OF PYLEPHLEBITIS

No. of Cases	White Blood Count
6	8,000-18,000
6	18,000-23,000
6	28,000-38,000
3	Unknown

these produce similar lesions. However the possibility that pylephlebitis is caused by a specific organism is lessened by the fact that different types of organisms are found associated with it.

In summary we would say that cases of appendicitis which are likely to develop pylephlebitis are those in which there is a history of chills, in which operation is omitted or delayed, in which a gangrenous or badly inflamed appen-

ly enlarged and tender. Jaundice is present in about half of the cases. There may be ascites with some dilatation of the veins over the abdomen. The original disease has been present several days. X-ray examination will aid in differentiating a sub-diaphragmatic abscess. The biliary tract, heart, lungs, urinary tract, intestines, etc., must be excluded by thorough investigation. The early stage of pylephlebitis is associated with the disease from which it springs. If chills are present during a developing appendicitis, we suspect it may occur. If they continue after it has been removed and the patient has more reaction than the local peritonitis would warrant and if there is slight tenderness over the liver and a mild jaundice, we would strongly consider an incipient stage of pylephlebitis. We cannot make a positive diagnosis, however, until the full blown picture has developed. The diagnosis was not definitely made in nine of the twenty seven cases until after operation or autopsy. Some of the diseases with which it was confused were gall bladder disease, tuberculous and caseous peritonitis, empyema, sub-diaphragmatic abscess, acute yellow atrophy, pancreatitis, pus in the lesser peritoneal cavity, biliary cirrhosis, coronary thrombosis, and bronchopneumonia with pyelitis.

*Signs and Symptoms.* The average time of onset of symptoms of pylephlebitis after the beginning of the story of appendicitis was 13.3 days (three cases not included). The average time of the development of symptoms and signs of pylephlebitis after an operation for appendicitis was 6.7 days (estimated from the 19 cases operated upon). At the onset of the disease the condition of the patient was good but naturally became debilitated with the progress of the disease. A high temperature of 103° or more with daily precipitous swings, accompanied by an elevated pulse was present in all our cases (see sample chart). Chills were re-

curred in twenty-five of the twenty-seven cases. The white blood count was almost always elevated ranging between 9,000 and 40,000 (Table IV). Three-fourths of the cases had a leukocytosis above 18,000. Two-thirds of the cases had had pain in the epigastrium or right upper quadrant. Only twelve of the twenty seven cases were recorded as showing jaundice clinically or by blood test. Eleven of the patients developed nausea and vomiting. Only five of the cases were mentally sluggish or irrational. The liver was enlarged or tender in twelve. There was dilatation of the abdominal veins and ascites in six. The urine occasionally showed bile, albumin, or blood cells but nothing else of significance. X-rays were taken in twelve of our cases. In eleven a high diaphragm or limitation of its movement was found. One showed fluid levels in the liver. Blood cultures were taken in eight cases and in seven they were negative, one showed *staphylococcus aureus*. Cultures taken from the liver abscesses revealed staphylococci in three cases and bacilli in three others.

*Treatment.* (a) Needless to say, preventive measures are more valuable than any form of treatment after the process has become well established. This means early diagnosis and operation.

(b) If, however, a neglected case of appendicitis with a history of chill, a gangrenous appendix and clinical evidence at operation of thrombosis of the mesenteric veins presents itself, it may be possible to do something more than simply remove the appendix in order to prevent a developing pylephlebitis. If, in such a case, exploration of the ileocolic vein can be accomplished without too great a risk of spreading the peritonitis, we advocate its exposure and ligation, as advocated by Wilms<sup>10</sup> and Braun<sup>6</sup>. This procedure was not attempted in any of our twenty-seven cases of appendicitis which developed pylephlebitis. It has been done only twice in all our cases of appendicitis,



neither of which developed pylephlebitis. Certainly, however, ligation of the ileoile vein is justifiable in one case in three hundred according to our statistics as any risk can be assumed if the early diagnosis of pylephlebitis can be made. The difficulty, of course, lies in the proper selection of such a case.

(c) There is a stage of the disease (one in our series) where there is an obvious thrombosis with a hard, thickened mass following along the course of the veins leading from the inflamed

reported by Halstead<sup>17</sup> in which this last method was used.

(f) Abdominal exploration may be indicated where the diagnosis is uncertain. If there are multiple abscesses which cannot be drained and the patient is jaundiced, a cholecystostomy, as suggested by Lilenthal<sup>18</sup>, may be justified. There are two such cases in our series, both unsuccessful.

Reports on portal ligation Colp<sup>19</sup>, Neuhof<sup>20</sup>, and Farmer<sup>21</sup> have not been hopeful.

(g) Supportive treatment with frequent small

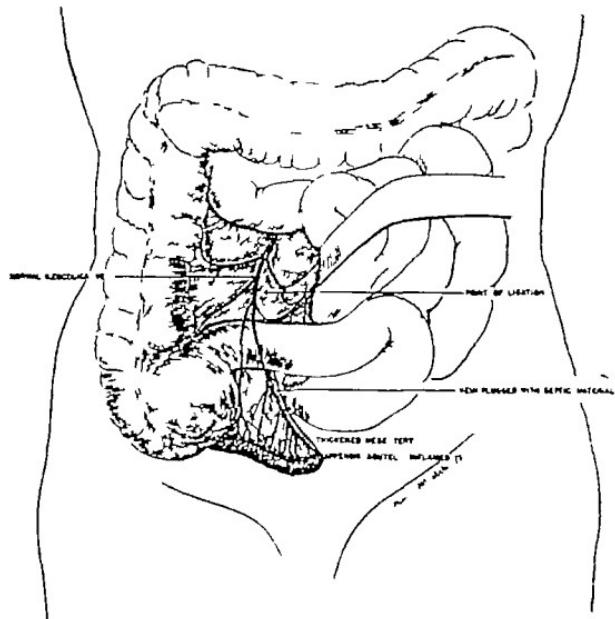


PLATE III. Braun modification of the Wilms operation.

appendix where the dangers of spreading peritonitis are unusual in which ligation above the thrombosis may possibly be of help in arresting the progress of a true pylephlebitic process. In our case no ligation was attempted and the patient eventually died of pylephlebitis, as was predicted by the surgeon at the time of the appendectomy.

(d) The procedure suggested by Braun<sup>22</sup> and carried out by Melchior<sup>23</sup> of doing a secondary operation as soon as the symptoms of pylephlebitis develop and tying off the ileoile vein is an intriguing one but we have had no experience with it.

(e) After a liver abscess has formed exploration and drainage should be performed when possible in two stages, either through the chest wall with attachment of the pleura to the diaphragm or by laparotomy with the attachment of the peritoneum overlying the liver to the parietal peritoneum. A successful case is

blood transfusions may be all that can be done. The value of intravenous dyes is questionable.

In our series, ten cases were explored three through an abdominal incision with single stage drainage, two through an abdominal incision without drainage, two through a transverse subcostal incision, three through a costal one-stage operation and one case (the only successful one) through a two-stage rib resection with drainage of a large liver abscess.

*Duration and Prognosis.* The average period of illness caused by pylephlebitis in our series was 33.8 days. The shortest period of illness was seven days, and the longest, ninety one days. Our known mortality was ninety two per cent. Two cases out of the twenty seven left the hospital alive. Only one is known to be alive and well three years later. That there should be a wide variation in the reports on mortality statistics in this disease is to be expected. Some authors have doubtless considered only those

cases confirmed at operation or autopsy, while others have included many cases diagnosed as pylephlebitis from the clinical signs and symptoms. Also, most of the reports have included cases with the source of infection from all causes including the appendix. We have occasionally seen mild jaundice, unexplained chills, right upper quadrant tenderness or a picket fence chait in postoperative appendicitis cases that have rapidly recovered, so that the diagnosis of pylephlebitis although suspected could not be made. Such cases have not been included in our series. Brutt<sup>7</sup> reported a ninety-five per cent mortality. Moschcowitz<sup>28</sup> found a mortality rate of eighty-five per cent. Eliason<sup>13</sup> reported the combined series in the literature at 54.5 per cent. Recently, Otschkin<sup>32</sup> reported a mortality of eighty per cent. Petré<sup>33</sup> reported, from the literature, twenty cases of single liver abscess of appendix origin with spontaneous recovery. Hellstrom<sup>18</sup> reported several pretty definite cases of multiple liver abscess, some of them proved at operation, which got well spontaneously without drainage. Barlow<sup>3</sup> reported an apparently fulminating case of pylephlebitis which recovered with only intravenous injections. The cases of Barnes<sup>3</sup>, Bruggeman<sup>8</sup>, Halstead<sup>17</sup>, Lilenthal<sup>23</sup>, Schultz<sup>35</sup>, etc., testify to the possibility of recovery after severe forms of the disease.

#### SUMMARY

1 Chills in appendicitis cases operated upon early (within thirty-six hours of onset) do not necessarily signify the development of pylephlebitis. Two and one tenth per cent of all our cases of acute appendicitis had chills.

2 Acute appendicitis of several days' duration associated with chills is likely to be followed by pylephlebitis. This occurred in forty per cent of such patients in our series.

3 The incidence of pylephlebitis following appendicitis in our hospital was 3 of one per cent.

4 Approximately one patient in six having chills during the attack of appendicitis developed pylephlebitis. When pylephlebitis occurs it is usually in neglected cases or in those in which the appendix is not removed early. The average time after the onset of symptoms of appendicitis before operation was performed was 7.7 days.

6 The average time in our series after the onset of symptoms of appendicitis before pylephlebitis developed to a point where the diagnosis could be made, was 13.3 days.

7 Histological study of the appendix mesentery is of little value in determining the development of pylephlebitis. The clinical evidence and the gross appearance of the local lesion at the time of operation are often characteristic.

8 Ligation of the ileocolic vein is recommended in carefully selected cases.

#### SUMMARY OF A TYPICAL CLINICAL HISTORY

A twenty six year old man entered the Hospital on July 27, 1932 with the complaint of abdominal pain of three days' duration.

P I Three days ago patient awakened at 6 A.M. with severe abdominal cramps all over his abdomen. No vomiting or nausea. He took a dose of soda and had a normal bowel movement which gave him temporary relief. In spite of the pain he played a round of golf that day and about noon the pain became more severe and localized below the umbilicus. He took a dose of castor oil that night and at 4 A.M. was awakened with a severe shaking chill which lasted twenty minutes, following which he was feverish, weak, and vomited several times. The next morning, the day before entry, he had a third chill. He was up and around all day, felt much better and drove to Boston from Albany, New York. The abdominal pain returned, became severe, and he was admitted to the Hospital.

P E T—101°, P—96, R—20. No jaundice. Abdomen relaxed, no masses, definite tenderness in the lower right quadrant deep into the pelvis. Definite tenderness in the right vault by rectum.

Lab W B C—13,000, 76% polys. Urine negative. Icteric Index 10.

Course The patient continued to have fever, and jaundice appeared gradually. The abdominal pain was still present and there was more tenderness on the right. On July 31, 1932 W B C reached 18,900 and patient believed to have appendiceal abscess. An exploratory laparotomy and appendectomy with drainage were done. Patient continued to have fever and on August 7 had a severe chill with pain in both upper quadrants. W B C 26,000, jaundice increasing, blood cultures negative. X ray No 5739 showed a high left diaphragm with limited excursion. An exploration for a subdiaphragmatic or liver abscess was done on August 11 and none discovered. He continued to have chills and fever, became more jaundiced, and died on August 29, 1932.

#### Appendectomy, No 32 3805

Autopsy No 6642 The mesentery containing the portal vein was thickened and studded with small abscesses. The liver was enlarged and contained many small abscesses scattered along the portal radicles. There was a large abscess, 7 cm in diameter in the left lobe. Between the liver and the transverse colon, well walled off with adhesions was a large abscess cavity filled with pus. Microscopic sections of the liver showed areas of necrosis scattered along the portal radicles. A gram stain showed no bacteria.

#### Anatomical diagnosis

Acute appendicitis

Pylephlebitis

Liver abscesses, multiple

Peritonitis localized in right upper quadrant with subhepatic abscess

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## DISCUSSION

Dr. FRED B LUVD Boston Mass. Mr Chairman—I have very little to contribute to this discussion but the paper did bring up old times when I was first on duty at the City Hospital, when all the cases we had were neglected cases, and a great many of them had chills before admission, and we had several cases in which pus was found between the folds of the mesentery of the appendix. We couldn't know we had this disease at the time

we operated, but it used to develop about ten days after the operation, in which again an appendix with an abscess was present with a lot of inflammatory thickening.

I don't remember ever noting thrombosis of those veins, at the time of the operation. The patients didn't do perfectly well from the first. The symptoms were all right, that is, there wasn't distention. But the patients began in a week or ten days to have chills and run a bad chart, and didn't look sick enough to have such a bad chart, and then usually there was a slight jaundice and the patient was uncomfortable with a yellowish color. This seemed like the kind of jaundice we get in anemia. Then in a large proportion of the cases multiple abscesses of the liver appeared.

We became very much excited about what we should do about the liver. Of course, the portal vein spreads into the liver and numerous abscesses are found on the surface and cases seem to have been reported where sometimes there were a few large abscesses in the liver which coalesced so that you could cure your patient by opening this abscess.

We tried it many times. The man who took most interest in it was Dr. Munro's father. I was associated with him at that time and he interested me in it. We didn't know you could do any good by cholecystectomy and I don't think you could, but we cut down a number of these livers and a number were spotted with multiple abscesses just as when we took out kidneys for multiple abscesses of the kidney. In those cases you could put drainage to the liver but as far as I can remember they were all fatal.

Now as to this kind of paper when a man has one case of a disease which is now much more rare than it used to be, and follows it up in every detail, and gives it consideration, it brings a lot of interesting things to light. I think if you can get above the clot, in case you do have another case of this disease, it wouldn't be a very serious thing to tie the vein above it. I should think it would be distinctly worth while, because if you really got above the clot, you could be sure you were averting the trouble.

Dr. HORACE K. SOWLES, Boston Mass. I should like to burden you with the details of one particular case which was operated on by my former chief, Dr. F. G. Balch. He is not present to report it in person.

I happened to be intimately associated in the subsequent course of this particular patient, and it is the only one to my personal knowledge and experience who has recovered from this disease. He was the son of a doctor in Wilkes-Barre, Pennsylvania fourteen years of age, a student at Andover Academy.

He was admitted to Bakor Memorial on February 21, 1933 just too late to be included in Dr. Allen's series. There was nothing particularly unusual about the onset of his disease. He was operated on within twenty four hours after the onset of the symptoms. At the time of admission to the hospital his temperature was 101° pulse 80 and white blood count 21,000 and that was the highest point reached in his blood count, because subsequent counts throughout the course of the next three months never reached above 10,000.

He was operated on as I say within twenty four hours of onset of symptoms. The appendix was swollen partially gangrenous, the mesentery of the appendix very much thickened and edematous. The mesentery of the appendix was tied before cutting these cases. It gives you a blockage of the mesenteric veins before the mesentery is traumatized.

Next day his temperature was lower, but at the end of forty eight hours it rose to 104°, and he had his first chill and from that time on had a typical chart such as Dr Allen exhibited, from one to two, or three, or four chills in each twenty four hours. He had nausea and vomiting at times, and was unable to hold more than a small amount of food in his stomach, and had a sense of fullness after eating a small amount. He had a high diaphragm and limited excursion by x-ray, and a slight suggestion of but no real jaundice.

He was in the hospital for a period of eight weeks. After the third week he was transfused once a week, because we felt that after three weeks' time the infection had reached a stage of subacuteness where transfusion might be of some benefit.

There was a good deal of urge to do an exploration. We even went so far as to schedule him for operation on two occasions, and when we came to the barrier, we refused to jump, so to speak, and sent him back to his room, for lack of positive evidence that we might be able to accomplish something by exploration.

After eight weeks' stay in the hospital, he was taken home to Wilkes Barre, Pennsylvania. His chills were diminishing somewhat in frequency at this time, though he was still having them occasionally. His illness continued for about eight weeks after his return home, and he is now perfectly well.

There is one factor which I am not familiar with, as to its value or rationale. That is, after his return to Pennsylvania, he received what they called fortified transfusions at intervals of a week for a period of five to six weeks. In this procedure the donor was given typhoid vaccine. A foreign protein reaction was stimulated in the donor by giving him the typhoid vaccine six to twelve hours before transfusion, and the blood given to the patient with the hope, I suppose, that increased resistance developed in that donor's blood would increase leucocytosis.

This procedure was done and he was transfused seven or eight times after his return home, with gradual and finally, complete recovery.

DR HORACE P STEVENS, Cambridge, Mass. This paper of Dr Allen's is very interesting to me because in a way, I suppose I came along at a sort of transitional period in regard to this subject. I remember that when I was a house officer the subject was one we heard a great deal about. It was a bugbear that we seemed to have inherited from our elders and which was often spoken of and never seen.

Now up to the time when Dr Allen brought it to our attention it had seemed to me that we had reached a stage where we not only never saw it but also never heard of it. However, of course it does occur as Dr Allen has shown but I can't help feeling that his suggestion to tie the vein does carry a considerable risk. It means that we are going to open up beyond the scene of action, so to speak, in the midst of a septic process, and it seems to me that this is certainly not a procedure that can be recommended routinely.

We undoubtedly see a lot of cases where there is great thickening and edema of the meso-appendix. It must be only a very small percentage of these cases that develop pylephlebitis. Now who shall say where we are going to draw the line? Are we going to tie the vein in all of them, or if not, how shall we select the right cases to do it in? If we tie the vein in all of them I am sure that we will be adding a risk at least as great as the risk of a pylephlebitis developing if we don't.

DR DAVID CHEEVER, Boston, Mass. *Mr Chairman—* Dr Allen's papers are always extremely practical and stimulating and his observations on this important subject are no exception to the rule. I quite agree with him that this condition, as a rule, occurs in instances of obscure, therefore neglected, appendicitis. We do not know, of course, how long after the onset of appendicitis a clot in the appendiceal and mesenteric veins may reach the liver by propagation or by embolism.

I well remember the instance of a middle-aged business man who, while at his office down town, had a stomach ache. He drove home in his car, got out of it, vomited, and went to bed on arrival. He was cared for by an excellent practitioner and seen by a competent consultant, there was no tenderness or spasm and only moderate leukocytosis. The picture was complicated by an old urinary infection following an antecedent prostatectomy which it was thought accounted for the fever and leukocytosis. He had a miserable illness, with gradual enlargement of the liver and jaundice and at autopsy there was found a small focus of suppuration about a retrocecal appendix with multiple abscesses of the liver. The diagnosis was never made during life.

The practical point was brought out by Dr Stevens that what we say and what is published are going to have a good deal of influence on the practice of men all over New England and I think it would be unfortunate if the practice of ligating the ileocecal vein proximally became widespread.

In the first place, of course, as Dr Allen has shown, pylephlebitis is an uncommon complication, there having been twenty cases in nearly 9,000, or one instance in 370 patients. It seems to me that its infrequency makes it quite unlikely that in the two instances of veins ligated recently at the Massachusetts General Hospital by Dr Allen since he began to investigate this, there would have been likely to develop a pylephlebitis. I cannot feel that in cases of acute appendicitis, the wider exposure and increased trauma and handling which would be necessary to perform these ligations, would be wise unless there was very definite indication. It would seem that the procedure would tend toward dissemination of infection. Undoubtedly in experienced hands and with careful selection of cases where the presence of a local thrombophlebitis of appendiceal veins is demonstrated tending to extend upward, a ligation of the venous channels proximally may be a relatively harmless and perhaps a life-saving measure. We will await with great interest the further experience of Dr Allen and others in this field.

DR ARTHUR W ALLEN, Boston, Mass. I expected to arouse a more heated discussion than has been evidenced by these polite gentlemen. I was afraid that many of you would gain the impression that we believe in ligation of the ileocolic vein in the majority of cases of acute appendicitis. We wish to emphasize, and our figures would indicate, that such a procedure is justifiable only in about one case in three hundred. Only two cases suitable for the procedure have come through our hospital in the past two years, or at least, only two cases have been so treated during this time. Both of these were diagnosed as appendicitis late in the disease, both had chills and at operation, were found to have a gangrenous appendix with only localized peritoneal reaction. There was thrombosis of the ileocolic vein. The vein was ligated above the thrombosis and neither of these cases developed pylephlebitis. Of course, we realize that they might not have developed pylephlebitis anyway.

We have seen patients with severe chills in early appendicitis that were successfully operated upon without developing pylephlebitis. When we ana-

lyze these cases more carefully we find that most of them have been operated upon within forty-eight hours of the onset and although the records fail to mention it in most instances we are under the impression that the thrombosis of the veins would not have extended into the ileocolic vein by this time. Two such cases were investigated with this in mind at the time of appendectomy thirty-six and forty hours after onset of symptoms and the thrombosis was found limited to the mesentery of the appendix. Neither of these had their ileocolic veins tied and both recovered without pylephlebitis.

We have seen mild jaundice associated with appendicitis convalescence and in a few instances precipitous swings in temperature and chills, with recovery. We felt that these patients were probably developing pylephlebitis and yet they made a spontaneous recovery so were not classified as such. Perhaps we should have classified them as mild cases of pylephlebitis.

Youth good care virulence of the organism and the individual ability of a patient to handle his in-

fection all play a rôle. This was obviously true in the case Dr. Sowles has reported.

Given a delayed operation in appendicitis with early chills, we ask that you remember the possibility of such a case developing pylephlebitis. With an enlarged incision the region of the ileocolic vein can be inspected and palpated in many instances without danger of spreading infection. If the vein is thrombosed, it will stand out as a cord the size of a pencil. It can be easily separated from the artery which should be spared. The vein can be ligated with very little dissection and without difficulty and in such a case pylephlebitis may be prevented. Many successful cases are reported in the literature.

I also think we should strongly consider the advisability of reoperating upon a patient who has the picture of a developing pylephlebitis after the appendix has been removed even three or four days afterward, in the attempt to isolate and ligate the thrombosed vein. The mortality is so high in pylephlebitis that any risk is justifiable if the diagnosis is reasonably certain.

#### NEW AND BETTER TUBERCULIN AIDS CATTLE-HEALTH CAMPAIGN

A new tuberculin free from foreign protein has been in use since last April in the testing of cattle for tuberculosis, the U. S. Department of Agriculture reports. The new product is materially superior to the tuberculin formerly available. Officials point out that the improvement came at a particularly fortunate time since tuberculin testing has been increased as an emergency and drought relief activity and more cattle have been tested in the last eight months while the new tuberculin has been available than in any previous similar period of the campaign. Dr. M. Dorset, of the Bureau of Animal Industry says that enough of the new tuberculin is being produced to test more than 18,000,000 cattle annually.

The new tuberculin is made from a pure chemical which takes the place of meat broth. The product is even more reliable in revealing the presence of tuberculosis than the broth tuberculin which for more than forty years has been produced by practically the same method as was devised by Robert Koch discoverer of the product. A few tuberculous animals failed to react to the Koch tuberculin excellent as that product was. "The new tuberculin has proved itself more reliable," says Dr. Dorset, "in more than 40,000 comparative tests by the Bureau." In one series he reports that more than 13,000 cattle were tested simultaneously with both the old and the new tuberculin. Of these, 1,127 reacted to the old tuberculin. Every one of these also reacted to the new tuberculin and 141 more — 1,268 in all — reacted to the new product. This shows

that the new tuberculin is more effective for diagnosis under practical field conditions and the Department consequently discontinued the production of the broth tuberculin last April.

The new tuberculin is prepared from cultures on a synthetic medium composed of various pure chemicals in the precise proportion required for maximum growth by the bacteria that cause tuberculosis. The most important single ingredient in this medium is a substance asparagin — a pure crystalline amino acid — which furnishes the nitrogen the bacteria require without introducing any protein whatever. The synthetic medium will grow about four times as many bacteria as an equal quantity of broth culture.

Until 1930 asparagin was a rare and expensive biochemical product, but in 1931 investigators in the Bureau of Animal Industry and of Plant Industry had worked out new sources and methods for commercial production of the pure product at reasonable cost. The asparagin can be obtained commercially by chemical methods from seedlings of the white lupine and of the soybean. In August 1931 Dr. Dorset, in commenting on the manufacture of asparagin, said, "The ultimate results that may follow the establishment of this infant industry cannot be predicted but it may at least be stated that ability to make asparagin commercially in the United States is a distinct asset to the scientific study of tuberculosis and the wide range of problems related to this disease. Continuing research, with a supply of asparagin available for experiment, led to the development of the improved tuberculin now in use — U. S. Department of Agriculture.

## STUDIES ON OVARIAN DYSFUNCTION

I The Hormonal "Measuring Sticks" Available for Clinical Use  
and Values Obtained on Normal IndividualsBY FULLER ALBRIGHT, M.D.,<sup>†</sup> JAMES A. HALSTED, M.D.,<sup>†</sup> AND ELIZABETH CLOONEY, B.S.<sup>†</sup>

**S**CIENCE emerged from metaphysics when people began to make measurements. With even crude measuring sticks one is more apt to arrive at the truth than with speculation alone. Thus Galileo in the XVI Century, using the Leaning Tower of Pisa as a measuring stick, scattered medieval conceptions to the winds by demonstrating that two bodies of different weights fall at the same rate. So in endocrinology the knowledge with regard to each gland reached a useful rather than a speculative state when some variable was found which could be measured and which varied with the activity of the gland in question. These variables, or measuring sticks, are widely used, e.g., the level of sugar in the blood for islets, the level of calcium for the parathyroids, the metabolic rate for the thyroid, now the serum sodium level for the adrenal cortex, etc.

With regard to the ovary the physiological laboratories have supplied us with much accurate information, probably as much as we know for any of the glands. The clinical side is far behind. This is not because possible measuring sticks are not available. Little use has been made of them, however, and what constitutes normal measurement is still unknown.

This paper concerns itself with the available measuring sticks and the values obtained on normal individuals therewith. The measuring sticks are not all that could be desired and a vast amount of further work will have to be done before we know what constitutes a normal measurement. Imperfect as it is, this knowledge leaves one in a better position to unravel certain clinical problems than if one merely speculated without measurements of any kind.

The problem with regard to the ovary has certain difficulties which a similar problem with regard to the thyroid, for instance, does not possess. In the first place, the function of the ovary is cyclical. Therefore, any table of normal values will have to include levels for each of the twenty-eight days. This at once multiplies the difficulty by twenty-eight. The age will be even more of a factor. Finally, the ovary produces two hormones, estrin and the corpus luteum hormone, progestin, and these in turn

are brought into existence by the action on the ovary of the anterior pituitary hormones, prolactin A and prolactin B respectively\*. The ideal to be arrived at, therefore, would be four measuring sticks for the four hormones and four tables of normal values. Then any disorder could readily be classified as hyper- thus or hypo- that, etc.

Of the four hormones, at the present time in this clinic estrin is being measured in the twenty-four hour urine specimen by the method of Kurzrok<sup>1</sup> and the prolactin A in the first morning specimen by the method of Zondek<sup>2</sup>. For the other two hormones no measuring sticks have yet been perfected sufficiently accurately to detect normal amounts. This probably does not constitute a fifty per cent deficiency in our armamentarium, however, for the following reason. The corpus luteum has been developed by mammals apparently so that its hormone can cause the changes necessary for intrauterine gestation and does not exist in premammalian vertebrates. It, therefore, seems likely that the hormone, estrin, and its pituitary stimulator, prolactin A, are the more fundamental. Furthermore, certain information regarding progestin can be obtained by performing an endometrial biopsy with a special punch apparatus. The presence of the secretory phase is conclusive evidence of an active corpus luteum and indirect evidence of the presence of prolactin B. So this in a sense constitutes a very rough manner of measuring progestin and its pituitary stimulator, prolactin B.

## METHODS

Estrin in twenty four hour urine specimen—Method of Kurzrok<sup>1</sup>

A 700 cc aliquot of a twenty-four hour urine specimen is filtered, made acid to litmus, saturated with NaCl, and extracted for twenty-four hours with ethyl acetate. The ethyl acetate is boiled off, the active principle is taken up in 7 cc. of olive oil, and injected in 1 cc., 0.5 cc., and 0.2 cc. portions into castrated female rats. Each amount is injected into three rats. The test is considered positive for any one amount if two of the three rats go into estrus. The result is recorded as so many rat units per twenty-four hours. The original method specifies three injections in twenty-four hours, inasmuch as oil is absorbed slowly it seemed unnecessary to divide the dose. It was found that equally good results were obtained by administering the extract in one injection. This is our present routine.

Prolactin A in first morning specimen — Method of Zondek<sup>2</sup>

Sixty cc of urine are made acid to litmus, filtered, added to 300 cc of 95 per cent alcohol and shaken.

\*The term estrin is used in this paper to refer to estrogenic substances no attempt being made to differentiate trihydroxyestrin and ketohydroxyestrin.

<sup>†</sup>From the Ovarian Dysfunction Clinic of the Massachusetts General Hospital. This investigation was made possible by a grant from the Delamar Mobile Research Fund.

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The mixture is allowed to stand twenty four hours in the ice-box. The precipitate is removed by centrifuging dried shaken for five minutes with anhydrous ether, again collected by centrifuging and dried a second time. The active principle is taken up in 12 cc of water the precipitate being allowed to stand in the ice-box for twenty four hours in contact with the water. The hormone is assayed on four infantile mice each receiving six doses of 0.2 cc. The result of the test is determined by gross inspection of the ovaries a positive test showing enlarged congested ovaries with evidence of follicle ripening. Opening of the vaginas of the mice and enlargement of the uterus constitute additional evidence of a positive test since estrin has been removed. The result is recorded as positive or negative. Zondek advocated the use of infantile rats and stated that they were four times as sensitive to prolan A, animal for animal as mice. This was not our experience as mice were found more satisfactory in that they were more sensitive. Furthermore a positive test in an infantile rat is less easily determined than in a mouse since their ovaries normally contain a few enlarged follicles. This discrepancy in opinions has recently been clarified by Hamburger<sup>1</sup> who found the rat more sensitive to the prolan A like hormone of the urine of pregnant women and of patients with testicular tumors, but the mouse more sensitive to the prolan A of the anterior pituitary and of the urine of castrates. Since the hormone in question in this study is that of the anterior pituitary mice are much preferable.

The presence of prolan B in large amounts of course would manifest itself by the presence of corpora lutea in the ovaries of the immature mice. The urines of normal women never give positive prolan B reactions.

It will be noted that the prolan A measuring stick as used in this laboratory can only differ entiate two quantities, an amount in 60 cc of morning specimen capable of giving a positive test and an amount incapable of so doing. It still turns out to be a useful test since normals usually turn out to have a negative test (*v. infra*) and certain of the abnormalities turn out to have a positive test. With the technique used here, therefore, one can only recognize the presence of too much prolan A since the normal amount gives a negative test. Tests have been worked out for the detection of the small normal amounts of prolan A in the urine<sup>4, 5</sup> but these are only just being started in our laboratories. These tests should differentiate the urines with a normal amount and those with none, so that in the near future it should be possible to distinguish three amounts, too little, normal and too much.

#### *Results of Estrin and Prolan A Measurements on Normal Individuals*

We have performed 154 estrin and 82 prolan A tests on normal women. The data can best be divided into two parts. The first part consists of daily estrin and, in some instances, daily prolan A tests during one or two entire months on the urine of three "normal" individuals. This part of the investigation was planned to show what variations are to be expected in any

one individual at different times in the month. The second part consists of determinations of estrin and prolan A at weekly intervals for four weeks in the urine of eleven normal individuals of different age periods. These data aim to give some idea of the variation between individuals.

*Part I Data* Two of the individuals were patients at the House of the Good Samaritan, Boston, suffering from chronic rheumatic heart disease, one was a technician. The estrin assays were done daily for one month on one of the individuals and for nearly two months on the other two. The prolan A tests were done daily on one of the individuals and almost daily on another. The results are shown in figures 1, 2, and 3.

*Part II Data* These data are shown in figure 4. The individuals consisted of four technicians, four nurses three office workers and the two patients with rheumatic heart disease. Their ages varied between sixteen and forty three.

An examination of the data brings out several tentative conclusions for the estrin and prolan A tests as done in this laboratory on "normal" women between puberty and the menopause. (A) The estrin test if taken at any time during the cycle has about an eighty per cent chance of being positive (127 positive tests out of 154 urines examined). (B) The prolan A test is almost invariably negative regardless of the day of the cycle in which it is done (one positive test out of eighty two urines examined). (C) The amount of estrin excreted has extraordinarily little relation to the day of the cycle although there is perhaps a tendency for it to be less one to two days premenstrually and during menstruation.

#### DISCUSSION

Although it is at first disappointing not to find definite peaks and valleys in the estrin excretions at various points in the cycle it turns out to be very useful to know that there are about four chances out of five of a twenty four hour urine sample containing a demonstrable amount of estrin by the law of chance, given two samples one week apart there would be twenty four chances out of twenty five of one of them being positive. One can at least say that if prolan A tests and estrin tests are done on the urine of one individual a week apart and if the prolan A tests are both negative and at least one of the estrin tests is positive the findings are consistent with normal, and that if the findings are otherwise they probably represent an abnormality. This knowledge will be made use of in subsequent papers.

One would like to have more data with regard to all the variables, age, day of cycle, etc. The objection to spending too much time on collecting such normal data is that better methods

are certain to develop and then standards collected by previous methods will be of no use. It is highly probable that with better technique, furthermore, definite hills and valleys will appear in the estrin excretions\*\*.

Because there are so many opportunities for

sidable margin. The results obtained by other investigators are of interest. Siebké<sup>7</sup> measured the excretion of estrin during the entire cycle in nine normal women and found some estrin in nearly every specimen with a tendency to be highest at about the middle of the inter-

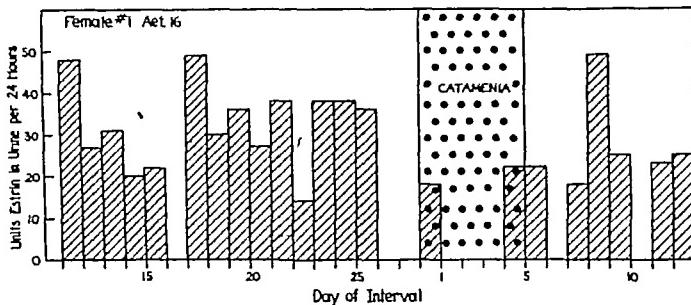


FIGURE 1 Daily estrin excretion over period of 30 days on young woman of 16 with normal history as regards catamenia. Note marked drop for two days before onset of catamenia

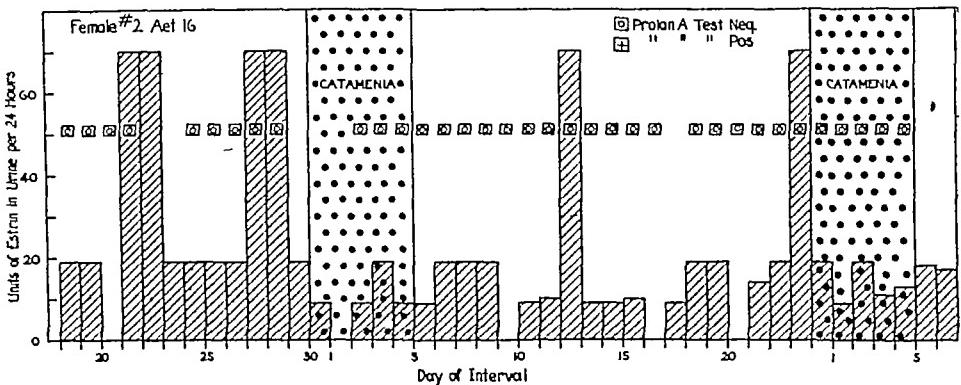


FIGURE 2 Daily estrin excretion over period of 43 days on young woman of 16 with normal history as regards catamenia. Prolan A determinations were done almost daily and were in all cases negative (q.v.)

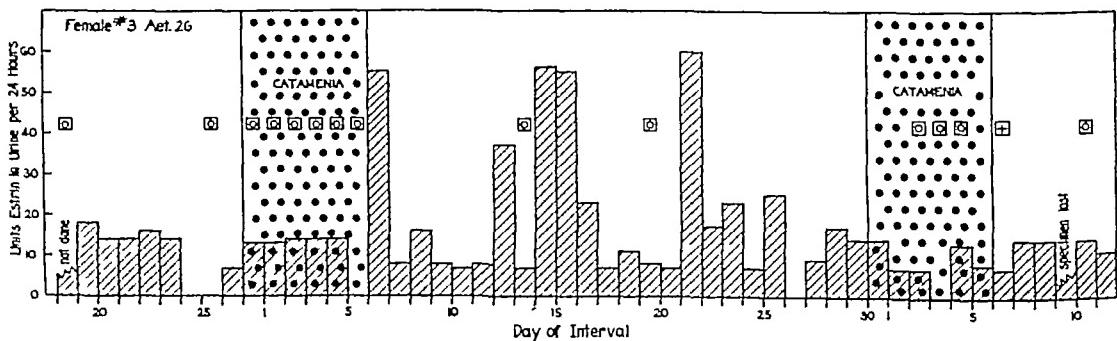


FIGURE 3 Daily estrin excretion over period of 51 days on young woman of 26 with normal history as regards catamenia. Note one positive Prolan A test out of 15

variation we believe that each laboratory must establish its own standards of normal. At the present time the results obtained by any two laboratories are almost sure to differ by a con-

\*\*Since the data in this paper were collected a paper by Cohen and Marrian has been published (Biochem J 28:1603 1934) which makes it appear likely that the hydrolysis of estrin would be more complete if the urine sample before extraction was brought to a pH of 2 with HCl and autoclaved for 2 hours. This procedure should increase the yields.

val. There was also a tendency toward a pre-menstrual drop in estrin excretion. Kurzrok<sup>8</sup> states, without giving data, that he has found that a normal woman excretes ten to twenty rat units of estrin per liter of urine daily with slight variations during the cycle. Frank<sup>9</sup> states that a normal woman excretes from 800 to 1000 mouse units during an entire cycle with two

periods of maximum excretion occurring at the time of ovulation and just before the period. Gustavson and Green<sup>10</sup> measured the estrin excretion on one person daily for eight and one half months and found a rise between the ninth and twelfth days after menstruation and a second

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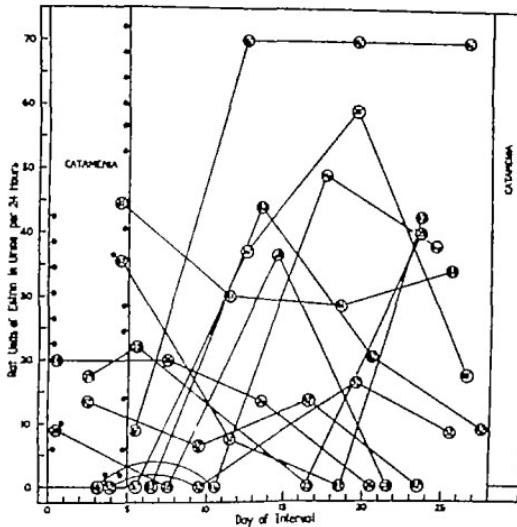


FIGURE 4. Estrin determination in 24 hour urine specimens at weekly intervals for 7 weeks in seven women of different ages periods with normal histories as regards cata menia. In each case amination a Prolan A test was done and found negative. When the intervals were not exactly 28 days the data were charted in respect to the nearest catamenia. For example the results on a specimen obtained on the 28th day on the chart of a 30-day cycle would be recorded on the 28th day on the chart. The numbers in the circles indicate the age of the individuals.

and rise from the fourteenth to the twenty-first day. Although Frank, Goldberger and Spielman<sup>11</sup> were able to measure prolactin A in the blood of normal women, Zondek<sup>12</sup>, with the method described above, was unable to find it in the urine of normal women. It can however, be found constantly in small amounts when more sensitive methods are used.<sup>4, 5, 6</sup>

## CONCLUSIONS

A twenty-four hour urine sample on a woman with normal catamenia should contain estrin by the method employed in this laboratory in one of two samples collected seven days or more apart in about ninety-six per cent of the cases. A concentrated "first morning specimen" on a similar individual with only infrequent exceptions should be negative in respect to the prolactin A test as performed in this laboratory.

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## BRONCHIECTASIS AS A SOURCE OF SCARLET FEVER DISSEMINATION\*

BY HARVEY SPENCER, M.D.†

**F**Ollowing scarlet fever, persistent discharge from infections of the nose, middle ear, mastoids, cervical glands, and other draining lesions may be the source from which scarlet fever is spread by contact to non-immune individuals.

Herewith is reported a case of scarlet fever where the source of the contagion was apparently a child who had suffered from bronchiectasis for many months and who seven weeks convalescent from scarlet fever harbored streptococcus hemolyticus in the pus from his lung. The patient who developed the disease was in intimate contact with this child.

E B, aged six, was admitted to a Convalescent Home for children on November 30, 1932, with the diagnosis of tuberculosis of the spine. He was kept constantly in bed on a frame in a hyper-extended position, and remained afebrile and was improving steadily until February 5, 1933. On that day his temperature suddenly rose to 103.6°, he vomited several times, and a diffuse red rash appeared on his body. The following morning his temperature was 102.8°, his throat was acutely injected, there was circumoral pallor, his tongue was heavily coated and showed enlarged red papillae at its margins and the fine red rash had spread over his body and extremities. The diagnosis of scarlet fever was made. Since there had been no other case of scarlet fever at the Home during the preceding nine and a half months, an effort was made to discover the source of the contagion.

It was found that H S, aged eleven, was admitted to the Home on January 3, 1933, with the diagnosis of bronchiectasis of two years' duration. He had been admitted to a Boston hospital on October 15, 1932, where he received bronchoscopic treatment for this condition following the demonstration by lipiodol injection of large fusiform bronchiectatic cavities at the base of the left lung. On November 2, he developed scarlet fever and was transferred to an isolation hospital from which he was discharged on December 17 to a foster home where he remained for two weeks prior to entering the Convalescent Home.

During the first four weeks in the Home his condition remained satisfactory as he ran no fever and did not cough, although there was persistence of dullness at the base of the left lung posteriorly and almost absent voice and breath sounds in the same region, but no rales were heard.

After running a temperature of 100-101° and coughing for several days, he raised about four ounces of bright red blood on February 4, 1933, and crackling rales were heard at the base of the left lung. Postural drainage, instituted at the time of the onset of fever and cough produced two or three drachms of pus twice a day. It was at this time that E B became exposed to this boy, when they were confined in adjacent beds. After E B developed scarlet fever, cultures of the pus from the lungs of H S were examined and found to contain many colonies

of hemolytic streptococci. H S was sent to an isolation hospital as a suspected scarlet fever carrier.

On February 6, two days after E B developed scarlet fever, the nursery maid who took care of both of these boys complained of a sore throat, and at the same time developed a fine red rash scattered in irregular areas over the chest, abdomen and back. Her throat was not injected, her tongue appeared normal, she had no fever, and did not vomit. The rash disappeared within twenty-four hours, and was not followed by any detectable desquamation. She had never had scarlet fever previously. Cultures from her throat contained many colonies of hemolytic streptococci. It was believed that she may have had an atypical case of scarlet fever. No more scarlet fever occurred at the Home until March 22, and in the case which developed at this time there was obviously no etiological association with the other cases reported which had developed six weeks before this.

In an attempt to prove bacteriologically that E B was the source of the scarlet fever in the two other patients exposed to him, hemolytic streptococcus was isolated in pure culture from the purulent material expelled from his bronchiectatic cavities. From broth cultures of this organism, filtrates were made in dilutions of 1/1000, 1/2000, 1/5000 and 1/10,000. Control dilutions of the same strength were made by heating the filtrate for one-half hour at 100° Centigrade. Intradermal injections were then made in two adults and three children susceptible to scarlet fever, using 0.1 cc of the filtrate and control dilutions, and the skin examined at the end of twenty-four and forty-eight hours. The results were equivocal and did not confirm bacteriologically, with the organisms isolated, the clinical impression that the organism isolated from E B was a toxin-producing strain of streptococcus and might be the source of the scarlet fever in the two patients exposed to him.

### DISCUSSION

The interrelationship of the various clinical manifestations of infection by streptococcus hemolyticus has been recognized during recent years. Medical literature contains many references to the transmission and transmutation of scarlet fever, erysipelas, puerperal sepsis, "quinsy sore throat", and of the more focal lesions, such as otitis media, sinusitis and cervical adenitis. The presence of streptococcus hemolyticus in whatever location it may exist may be considered a potential source of dissemination of this organism which may develop manifestations of various types, depending upon the characteristics of the host invaded.

Although H S was probably a carrier of streptococcus hemolyticus continuously following his attack of scarlet fever, he was likely not a particularly dangerous source of dissemination of this organism so long as his bronchiectasis remained quiescent. However, as soon as cough, fever, and the raising of pus from the lung by postural drainage returned, it seems

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that he became as dangerous a source of dissemination of streptococcus hemolyticus infection as though he had discharging cervical glands or other of the more usual lesions harboring these organisms. It was indeed several days after the return of these symptoms of activity of the bronchiectasis that scarlet fever developed in E. B.

Medical literature contains only slight reference to bronchiectasis as a potential source of the dissemination of streptococcus hemolyticus infections. This source appears particularly in

teresting in that it may remain latent during prolonged quiescent phases of bronchiectasis and later become a virulent source of dissemination if the bronchiectasis again becomes active.

Due to the protracted course of bronchiectasis, the presence of hemolytic streptococci in the pus from the lung seven weeks after recovering from scarlet fever, presents a difficult problem in the control and cure of this patient as a carrier of streptococcus hemolyticus.

## REPORT OF A CASE OF STRANGULATION (TORSION) OF THE GALL BLADDER WITH PERFORATION AND GANGRENE IN A BOY OF SEVENTEEN.\*

BY EDWARD BLANK, M.D.†

**STRANGULATION** of the gall bladder with perforation is met with so infrequently that a report of this case seems worth while.

### CASE REPORT

P. B. A seventeen year old, white, American, high school boy walked into the hospital complaining of pain in the abdomen. Four days before entry the patient was suddenly stricken with severe pain in the epigastrium that radiated to the right lower quadrant and remained localized in this region. There was no vomiting but nausea and considerable "belching of gas." The following day he vomited profusely and was given a dose of salts. He immediately vomited and the dose was repeated followed by two enemas with good results. The pain subsided the next day and on the following day (day of entry) he had very severe pain in the right lower quadrant. He was seen by his local doctor for the first time and was sent to the hospital with a diagnosis of acute appendicitis. Other historical data were of no interest medically.

Physical examination on admission revealed a well-developed, tall, slender lad lying in bed with knees flexed. Face flushed. Skin hot and dry. Tongue dry and heavily coated. Odor of breath foul. Heart and lungs negative. Tenderness all over the right side of abdomen but distinctly more so at so-called McBurney's point with spasm and rigidity. Gall bladder not felt. No other findings of import were made. Temperature 103 orally. Pulse 120. Respirations 25.

White blood count on admission was 15,000 with 93 per cent polya. Urine was negative. Blood Wassermann taken subsequently was negative.

A diagnosis of acute perforative appendicitis was made and operation under gas oxygen ether anesthesia was performed by Dr. A. P. Lowell. The usual right rectus incision was made. On opening the abdomen, the appendix was easily isolated, it appeared and felt normal.

There was no free fluid in the region of the appendix. As the incision was extended upward greenish brown fluid was seen coming from higher up in the abdomen. As the wound edges were re-

tracted the gall bladder was brought into view. It was as large as a hen's egg, black, distended, without lustre and adherent to the liver by fresh fibrinous adhesions which were easily freed with the finger. There was a definite twist of the gall bladder at its neck and a pin point perforation one half inch distal from the cystic duct. No stones were found in the gall bladder or cystic duct. A trocar was thrust into the fundus and two ounces of brownish green viscid fluid was aspirated. After the latter was done the twisted gall bladder uncoiled itself. Cholecystectomy was done removing the gall bladder down to the neck as the tissues were very difficult to handle because of the extreme friability. A catheter was sewed to the stump. Two cigarette drains were inserted in the pouch of Morrison, one drain in right iliac fossa and one in the right flank which was pulled through a stab wound in the right flank. Abdomen was closed in layers in the usual manner.

Gross examination of the specimen revealed that the serosa was covered by a layer of fibrin. It was dark purplish in color. The wall was thickened edematous and necrotic. The mucosa was dark red, discolored and spongy in consistency. Microscopically the entire wall of the gall bladder was extremely edematous and congested giving an appearance of strangulation. There was no cellular inflammatory reaction in the mucosa or submucosa. On the serosa and extending just beneath it there was an infiltration of leucocytes and lymphocytes with some fibrin formation. Leucocytes predominated in the reaction.

The patient made an uneventful recovery and was discharged from the hospital thirty days after operation.

### SUMMARY

- 1 A case of strangulation of the gall bladder with perforation and gangrene is presented.
- 2 The case is of interest because of its rarity particularly in a boy of seventeen and because the symptoms so closely simulated acute appendicitis.

I am indebted to Dr. A. P. Lowell, Chief of the Service, for permitting me to report the case and to Dr. R. C. Wadsworth of the Department of Pathology of Tufts Medical School for the pathological report.

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## INSECT BITE FOLLOWED BY GAS GANGRENE IN A DIABETIC

### Report of a Case

BY JOHN R. BARRY, M.D.\*

**I**N a search of the literature of the past twenty years no reports were found of an insect bite followed by gas gangrene in a diabetic. For this reason a brief report of such a case treated by the author may be of interest.

S.P., forty nine year old white housemaid was first seen on June 23, 1934. Her past history was negative. She was accepted for life insurance five years before and was told that her condition was excellent. On June 20, 1934, while hanging out clothes on the roof, she was stung on the left foot by a wasp. She felt immediate severe pain, and ten minutes later noticed a bluish black spot the size of a pinhead in the centre of a red swollen area an inch in diameter. The infection which followed radiated from the site of the sting. When seen, there was a bluish red area with fluctuation and crepitation on the distal lateral portion of the dorsum of the left foot. Pulsation in the dorsalis pedis artery was good. The leg showed moderately large varicosities. T 101.4°, P 104, R 20.

The patient entered the Bay State Hospital, and the septic area was opened widely. Dirty pus with gas bubbled out of the wound and had the foul odor characteristic of gas gangrene. The subcutaneous tissues showed extensive necrosis. Urine test with Benedict's solution at the time of operation showed a brown precipitate. Insulin was given according to urinalyses saline solution was given by clysis, and the septic area was treated with hourly irrigations and dressings of hydrogen peroxide. A therapeutic dose of gas bacillus antitoxin was given subcutaneously daily for four days. The day after operation the patient began to fibrillate, but responded promptly to digitalization. She was put on a diabetic diet with forced fluids, and insulin was continued four times daily according to urine tests. An ampoule of a non specific milk preparation was injected intramuscularly daily for five weeks. Dakin's solution, chlorinated soda solution, and Enzymol dressings were tried on the wound but proved

to be too painful, so peroxide irrigations and dressings were resumed. Iron and ammonium citrate and Haliver oil capsules were given to increase the patient's resistance and to combat a moderate secondary anemia. The hemoglobin was 70 (T), and the red blood count 3,850,000.

A week after operation the toes and distal portion of the foot showed involvement with pus coming from the region of the second toe. Several of the extensor tendons were exposed and showed much destruction. A week later the plantar surface of the foot showed slowly progressing inflammation. Beginning three weeks after operation, at different times, the second and fourth toes were removed because of gangrene and osteomyelitis of the phalanges, and two generous incisions were made on the plantar surface of the foot for drainage of pus which had extended through from the dorsum.

After five weeks in the hospital the foot had improved considerably, and the patient was allowed to go home. Her pulse and temperature were normal, and she was taking 15-20 units of insulin daily. After a month at home, without apparent cause, her insulin requirement on a 1500 calorie diet rather suddenly rose to 40-45 units daily, and the distal portion of the foot began to swell and become red. She reentered the hospital, and after two days without any particular change in treatment the inflammation subsided promptly, and the insulin requirement fell to 20 units daily. It was then learned that her sister, by threats and odd behavior, had worked the patient up to a state of high nervous tension. Adjustment of this situation was promptly followed by improvement in the clinical appearance of the foot and diminution of the glycosuria.

By September 24 the foot showed no pus and only slight redness, and all incisions were healed. The patient had been walking on it for two weeks. Insulin requirement was only five units in 23 days. X-ray showed a low-grade osteomyelitis of the left fifth metatarso-phalangeal joint with destruction of the joint but no significant reaction. The patient was discharged to return to work three months after the original infection. When last seen in December the foot was completely healed. She wore a shoe and walked without difficulty, and her insulin requirement was only 5-10 units in two weeks.

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## AN ATTEMPT TO SECURE X-RAY EXAMINATION OF THE UNCOOPERATIVE TUBERCULOSIS CONTACT\*

BY H. R. EDWARDS, M.D.†

**T**UBERCULOSIS contacts may be divided into two general classes:

- 1 Cooperative, or those who respond to reasonable requests for routine examination.
- 2 Uncooperative, or those who refuse all reasonable requests by public health nurses, physicians, or others to be examined.

The question is frequently raised by tuberculosis administrators as to the amount of time and effort that should be placed on the uncooperative group to secure examination. Not infrequently, we find individuals from this group developing an active pulmonary disease, and there is always the suspicion that this group of individuals is responsible for much re-infection both in the family and the community.

The problem may be stated as follows. Is it worth while to make unusual efforts to secure the examination of the uncooperative contact?

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An uncooperative contact in New Haven means that every such individual has been repeatedly visited either by the visiting nurse, the clinic nurse in some instances, the school nurses in others, and in some cases social workers. Many have been confronted with the usual amount of public health education through lectures radio and the press. In spite of our ordinary, and in many cases extraordinary effort, they consistently refuse examination. The promptness with which we follow up contacts to newly diagnosed cases does not assure anywhere near complete results. Between July 1, 1932 and June 30, 1933, one hundred and eleven new families were added to our roster. Of the four hundred and thirty three contacts, two hundred and four or 47.1 per cent, were examined within a year of the primary diagnosis, and of the two hundred and four examined, twenty five or twelve per cent were found to have tuberculosis. Wiesner et al<sup>1</sup> at the Henry Phipps Institute in Philadelphia reporting on one hundred and eighty two families, report almost identical results.

In New Haven<sup>2,3</sup> we had definite information on the amount of new significant disease that will be found by routine examination of all family contacts. The yield in new significant tuberculosis in contacts is found to be greatest when our primary case was known to be tuberculous meningitis, and somewhat less, but still very important when the primary case was pulmonary tuberculosis.

Our present family roster of one thousand four hundred and twenty-eight families with a tuberculosis problem dates back in some instances to 1910, but the majority are of record since 1920. Naturally, many of the listed contacts are now living away from New Haven and one hundred per cent performance is impossible. On April 1, 1934, there had been three hundred and eighty seven or 27.1 per cent of families in which all contacts had been examined. In one thousand and forty-one families, there were still one or more contacts who had not been examined. A general summary of the contact examinations in the incomplete groups is shown in table 1.

The contacts approached for this study were selected according to the following conditions:

- 1 Adults or children on our tuberculosis family roster who to our knowledge had never been examined for tuberculosis, or at least had never been finally diagnosed
- 2 Selection was made irrespective of economic status and ability to pay for an x ray. Where possible, the contact was supposed to pay seventy five cents
- 3 Special emphasis was placed on those contacts in (1) above that had had recent or prolonged exposure to open tuberculosis, and less on those exposed only to an apparently healed or non pulmonary form of the disease.

The chief method of approach was through home visitation by the visiting nurses. The school nurses made valuable contacts with the pupils in the schools. The school teachers helped by urging the plan upon the children in their home rooms.

Of the four thousand seven hundred and eighteen listed in our families as incomplete, our efforts were concentrated on two thousand, six hundred and thirty-eight as being the most important. They were, for the most part, contacts to a pulmonary form of the disease either past or present. They may be conveniently divided into two major groups (1) adults and preschool 2005, (2) school children, 633. There were one hundred and forty nine or 7.4 per cent of the former, and four hundred and fifty two or 71.2 per cent of the latter groups actually x rayed.

The diagnostic method used in this study was the Powers rapid x ray method, because in 1932<sup>4</sup> we had found it to possess unusual popular appeal among school children, and the diagnostic quality to be reasonably accurate for survey work.

#### RESULT OF X RAY

The interpretation of x rays in this study was made with due consideration of known family history of exposure, the amount of known infection and disease in other contacts

TABLE 1

THE STATUS OF EXAMINATION OF CONTACTS IN 143 NEW HAVEN FAMILIES—APRIL 1, 1934

Type of Family	Total Number	Families		Contacts in Families		
		Completely Examined	Not Completely Examined	Total Number	Examined Number	For Cent
With Pulmonary Tuberculosis	1036	308	728	3178	963	30.3
With Non Pulmonary Tuberculosis	303	79	313	1540	410	26.6
Total	1428	387	1041	4718	1373	29.1

TABLE 2  
PAPER X-RAY DIAGNOSES OF 611 UNCOOPERATIVE TUBERCULOUS CONTACTS IN NEW HAVEN—1931

Diagnoses	All ages		Under 5		5-9		10-14		15-19		20-24		25-29		30-34		35-44		45+		
	Total	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
Totals	611	288	323	—	15	91	82	95	89	48	39	18	24	8	15	6	17	14	25	9	17
Suspicious Pulmonary	8	3	5	—	—	2	1	—	—	1	—	—	—	—	—	1	—	1	—	—	1
Healed Pulmonary	17	6	11	—	—	—	1	—	—	2	2	—	1	—	1	—	2	1	—	1	4
Childhood Type	31	12	19	—	—	5	4	1	6	1	3	2	1	—	1	—	1	—	2	—	1
Suspicious Childhood Type	36	15	21	—	5	7	7	6	8	2	—	1	—	1	—	—	—	—	—	—	—
Cervical Adenitis	1	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
Pleurisy	3	2	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
No Manifest Tuberculosis	515	250	265	—	10	77	69	85	75	44	33	13	20	8	12	4	15	12	21	7	10

examined previously, and the visiting nurses' notes on the health of the case x-rayed. Diagnoses of suspicious childhood or pulmonary types were based primarily upon increased hilar or parenchymal markings beyond a reasonable normal limit. Further, we were particularly anxious that some of this group be cleared further with tuberculin, and other methods by the family physician or dispensary. It is likely that in routine interpretation of an unknown group, we might have passed some of these films as showing no manifest disease. Such a diagnosis in these cases would have made it difficult or impossible to secure cooperation for further study. All definite diagnoses were based upon unmistakable intrapulmonary changes. The findings in this study are set forth in table 2.

#### DISCUSSION

The most striking feature of this study is the fact that no apparently active pulmonary tuberculosis was discovered. Further, that only seventeen apparently healed and eight suspicious lesions were found. Careful clinical study may indicate some activity in these cases, though from available visiting nurses' notes they are in apparent good health. These results are doubtless influenced by the fact that so small a percentage of adults were x-rayed. In all probability, x-ray examination of the majority of the adults would have shown more significant disease.

It is of interest to note that about sixty percent of the pulmonary lesions either of an apparently healed character or those of a suspicious nature were found in contacts over twenty years of age. This reemphasizes Barnard's<sup>5</sup> findings in the study of 10,000 paper x-rays in Harlem, New York.

The suspicious childhood type cases were almost entirely among contacts where there has been known exposure to positive sputa cases. Thus careful supervision is imperative.

The high percentage of school children actually x-rayed is to be expected, because there we had the combination of two nursing services as well as the school authorities to urge examination.

The low response from the adult and preschool group is also logical, for there we were dealing with many individuals whom we had labored with for months or years previously. In the majority of instances, they were in apparent good health, and this fact alone made them feel that examination was unnecessary. The matter of cost did not enter seriously into their response, because a large majority of this group were x-rayed free, and the same privilege was available to many who refused. As may be expected, the majority of adult contacts were among a group in a low economic level, and many were on the relief rolls of the Depart-

ment of Charities and Corrections and other relief agencies in New Haven.

The examination of this group gave us fifty seven new complete families, or a total of four hundred and forty four with all contacts examined. This represents 31.1 per cent of the 1,428 New Haven families in which there was known to be one or more contacts.

This study indicates quite clearly that in New Haven there is a fairly large percentage of contacts that will consistently refuse examination regardless of how simple the method or persistent the appeal.

The adult groups are by far the most important as possible spreaders of disease and with our extra efforts only 7.4 per cent of the adult and preschool groups were persuaded to come for examination. In consideration of all factors involved in this study, it is our conclusion that there will always be certain uncooperative contacts who refuse all reasonable effort to secure examination. Further that the cost involved in nursing and other services in an effort to bring unusual pressure to secure cooperation is not justified.

#### CONCLUSION

1. Two thousand, six hundred and eighty three uncooperative contacts consistent-

#### HEALTH EDUCATION INSTITUTES

Miss Jean Latimer Educational Secretary of the Massachusetts Tuberculosis League, has recently concluded three successful institutes on health education in the high schools at Salem and Springfield covering the northeast, southeast and southwest sections of the state. Superintendents of schools, high school principals, supervisors and teachers have been active participants in these institutes and have shown an interest in discussing the variety of problems in the field of high school health education. Dr. Jessie Feiring Williams addressed the three institutes on "Basic Principles in the Organization of Health Education" and Dr. H. D. Chadwick, State Commissioner of Health, presented the problem of tuberculosis in high school students and the Massachusetts plan to examine 7th, 9th, and 11th grade pupils by the tuberculosis sanatorium staffs working in co-operation with school medical services.

The institutes began at 3:45 in the afternoon and continued until 9:30 in the evening with a brief intermission for supper. The meetings were held in the auditoriums of the high schools, and several hundred were in attendance at each of the institutes.—*Bulletin of the National Tuberculosis Association*

ly refusing examination at the Dispensary, or by their physicians, were offered an x ray examination. Six hundred and eleven or 23.2 per cent accepted.

2. Of the school children approached 71.2 per cent were x rayed, whereas only 7.4 per cent of the preschool and adult contacts responded.
3. There were no apparently active pulmonary cases discovered.
4. Forty nine cases (8 per cent) were found with apparently healed tuberculous lesions, seventeen of which were pulmonary in type.
5. The contact who consistently fails to respond to the usual routine efforts to secure co-operation, in our experience, does not justify the time and expense of extraordinary efforts.

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#### CANCER CURE VENDOR ESCAPES PROSECUTION DIES WITH CANCER

Charles W. Mixer self-styled cancer specialist of Hastings Mich., is dead of cancer on the eve of his prosecution on charges of violating the Federal Food and Drugs Act. His principal medicine "Mixer's Cancer and Scrofula Syrup" composed of potassium iodide, senna, licorice, yellow dock root, sarsaparilla, wintergreen, glycerine, alcohol and sugar syrup had for a long time evaded the Federal law until Food and Drug Inspectors intercepted a shipment to Chicago in July 1932 and based the recent case on it. This step was necessary as the Federal government can bring cases under the Food and Drugs Act against interstate shipments only.

Even during Mixer's last illness, his office force continued to sell and ship the so-called "cancer cure," which fact led the Government to request that the trial proceed without delay in spite of the defense attorney's plea that the defendant was seriously ill and could not stand trial. Mixer's death has now blocked the suit, which will necessarily be dismissed automatically.—*U. S. Department of Agriculture*.

**CASE RECORDS**  
*of the*  
**MASSACHUSETTS GENERAL**  
**HOSPITAL**

ANTE MORTEM AND POST MORTEM RECORDS AS USED  
 IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.

CASE 21051

PRESENTATION OF CASE

A sixty-six year old American widow entered complaining of soreness in the right epigastrium, weakness and vomiting.

Approximately two months before entry she had an attack of vomiting, the vomitus consisting of yellow material. Associated with this attack was a burning sensation in the midepigastrium and soreness along the right costal border. There was no real pain. She had similar attacks of vomiting about every other day since then. Three weeks after the onset of these attacks she noticed that her stools were clay colored and later that her skin was yellow. She had a little fever which continued for a few weeks. She lost her appetite and also about twenty-five pounds in weight. She continued to have these attacks but for a few weeks before entry her stools were not clay colored and the jaundice had disappeared. Constipation had been marked during this period.

Her family and marital histories are non-contributory.

Twenty-five years before entry she had a gall-stone attack characterized by sharp colicky pain in the epigastrium with vomiting. She believed that she was jaundiced about once every six months for several years later. Finally, a physician treated her with olive oil, following which she passed several stones about the size of beechnuts. Ten years before entry she had "shingles" on the right side of her neck for a period of about three months.

Physical examination showed a tired-looking woman with brownish skin and yellowish sclerae. There were a few moist râles at the right base. The heart was enlarged or displaced to the left, the maximum apical impulse being present in the anterior axillary line. The blood pressure was 145/80. The liver dullness extended from the fourth intercostal space to two fingerbreadths below the right costal margin. The liver edge was moderately tender and below it was a hard, small mass. The abdomen was slightly distended but not rigid. There was no fluid wave.

The temperature was 100.8°, the pulse 115. The respirations were 20.

Examination of the urine showed a specific gravity of 1.005 to 1.018 with a slight trace of

albumin. Bile was present in five out of seven examinations. The sediment contained a rare white blood cell and epithelial casts. The blood showed a red cell count of 3,460,000, with a hemoglobin of 60 per cent. The white cell count was 18,400, 89 per cent polymorphonuclears. The stools were soft, light brown in color and showed a negative guaiac test. The van den Bergh was 12.2 milligrams, the icteric index 70. The non-protein nitrogen was 20 milligrams, the blood sugar 144. A Hinton test was negative.

After an intravenous Graham test the gall bladder shadow was not seen. There were several rather indefinite areas of calcification in the region of the gall bladder and cystic duct. These did not have the appearance of stones. The liver edge was low and the margin was straight except in the region of the gall bladder. A gastro-intestinal series showed herniation of about one-third of the stomach through the esophageal hiatus. In addition the hernial sac contained the entire splenic flexure. The portion of the stomach below the diaphragm contained food and a large quantity of secretion. No barium left the pylorus at the time of fluoroscopic observation. At six and twenty-four hours, even though the stomach had been pumped, there was still a large quantity of barium remaining. Films of the chest confirmed the previous findings, showing evidence of hernia of the fundus of the stomach and colon. The right side of the diaphragm was unusually high in position in its medial portion. The remainder of the lung fields was clear. There was an azygos lobe on the right. The heart was not definitely enlarged or displaced.

On the fifth day an exploratory laparotomy was performed. She failed postoperatively, developed râles in her chest and died on the fourth postoperative day.

DIFFERENTIAL DIAGNOSIS

DR RICHARD H MILLER I shall be as brief as possible.

Let us go back to the past history. "Twenty-five years before entry she had a gallstone attack." Then there follows a vague story of jaundice from time to time, and the passage of what she thinks were gallstones. That is not exactly conclusive, but I think we may assume that she has had gallstones.

Then, in the present illness, at the age of sixty-six, eight weeks before entry, she begins to vomit yellow material, and to notice a burning sensation in the midepigastrium. That to my mind would suggest not so much that there was a stone in the common duct as that something pathologic was going on in the gall bladder. She continues to vomit for two or three days at a time, and then three weeks before entry becomes jaundiced and passes clay colored stools,

meaning the onset, of course, of obstruction in the common duct from one or another cause. Her appetite fails and she loses twenty five pounds. That loss of weight suggests malignant disease, but, on the other hand if she has completely lost her appetite it may be due to the fact that she has not taken enough nourishment. These symptoms continued but she states that previous to entry the jaundice disappeared and that the stools ceased to be clay colored which suggests that whatever had been the cause of obstruction was to a certain degree ameliorated.

On physical examination there is a mass in the region of the gall bladder. I do not think that this is different from what one might expect, but the actual cause of the hard tumor is not quite so clear.

The urine is not significant, though bile is found in several examinations. The blood examination shows that she is moderately anemic. She has an elevated white count. The van den Bergh is 12.2 milligrams which together with the icteric index of 70 means jaundice of considerable degree. The non protein nitrogen and blood sugar are not remarkable, except that the non protein nitrogen is somewhat low. Her temperature and thus tenderness under the liver suggest some sort of inflammatory process, and that is confirmed by the elevation of the white count.

The Graham test shows that the gall bladder is obviously diseased, the next sentence is hard to interpret because it says that there were areas of calcification which did not look like stones. I should say, not having seen them, that they were stones, even though they did not look like them. The liver edge was low. Now comes an entirely different finding a herniation of the fundal third of the stomach and of the splenic flexure of the colon through the diaphragm. I assume that this was a matter of long standing probably congenital, and entirely irrelevant to the present problem. I will not mention it further. The x ray of the stomach shows some retention of barium but I think the process going on in the region of the pylorus, or the gall bladder, might account for that. The diaphragm is high on the right side, a fact which would be explained satisfactorily, I think, by the enlargement of the liver.

This sums up the whole thing briefly. What we have to consider is in the first place whether this woman has a malignant process around the gall bladder, or in the gall bladder or in one of the neighboring organs, or whether it is only an infectious process. It seems to me that the most probable diagnoses which we should consider are as follows (1) Cancer of the pancreas. Cancer of the pancreas cannot be ruled out, but in my experience it would be associated with a more progressive jaundice. It would not show a period of remission as is indicated in this history (2) Cancer of the common duct or other ducts. This is not extremely rare. I have seen two cases in the past two or three years and in those the progression of the jaundice was so continuous and the jaundice was so extreme that I should be inclined to rule it out in this case. I am influenced by the fact that the jaundice let up after it had first appeared, if I interpret the history correctly (3) A subacute infectious process involving the gall bladder with enough edema in the region of the cystic duct and the common duct to cause a certain amount of obstruction with a resulting jaundice. I believe that that is a possible diagnosis and cannot be entirely ruled out.

The occurrence of an ulcer at the pylorus, or near it, I think does not enter into our discussion.

The last thing I have for consideration is that of cancer of the gall bladder itself, of which I have seen a number of cases. The description in this history of a small hard mass, with a certain amount of jaundice, and a certain amount of infection to my mind fits in with a cancer of the gall bladder, and knowing nothing more about this case I shall lean toward the diagnosis of primary cancer of the gall bladder and secondary subacute cholecystitis.

#### X RAY INTERPRETATION

DR. GEORGE W HOLMES The finding of the herniation through the diaphragm is not so clear to me on these films as the statement in the record would lead one to expect. I suppose they had other evidence. There is one striking thing about this case. The stomach retains the barium for twenty four hours. Apparently when the examination was made the patient had a stomach full of food and the fact that no barium left the stomach during examination would be of no importance under these circumstances. On the other hand it would be important if the stomach emptied at the end of twenty four hours. We have not sufficient evidence to say that there was a pyloric block, although we ought to think of it. This film shows the high diaphragm on the right side the heart shadow prominent to the left, and this may be the shadow referred to as the herniation. The fundus of the stomach is narrowed and there seems to be a line above the diaphragm. Evidently they looked for esophageal varices. There is a suggestion of them here but the other film looks normal. It shows the esophageal markings, and they are normal.

We have a series of films of the gall bladder region. The gall bladder is not visible in any of the films. These small shadows here may have been the shadows that were spoken of in the report. They certainly do not look like gall stones and the distribution is not like gall

stones It looks to me more like something in the intestinal tract

#### CLINICAL DISCUSSION

DR. TRACY B. MALLORY Dr Allen, you saw and operated upon this patient

DR. ALLEN This woman was starving to death, also, she had pretty complete jaundice. In spite of the fact that there did not seem to be very much hope of permanent relief there was a reasonable chance that we might find a distended gall bladder that we could anastomose to the stomach and possibly also do a duodenogastricostomy. In carcinomas of the head of the pancreas we not infrequently have patients survive long enough, for the duodenum to become obstructed, so that a gastro-enterostomy may have to be done two or three years after the cholecystgastrostomy. We felt that there was no hope that this case would show a benign lesion. I rather favored the diagnosis of cancer of the head of the pancreas before operation, but at operation it proved that Dr. Miller was right, that the gall bladder was primarily involved as far as we could tell. It was contracted and small. There was a large, irregular mass involving this entire region. The question then arose as to whether we should do something, or simply sew her up. With the first alternative we had a choice of gastro-enterostomy, or jejunostomy. Through a jejunostomy one could feed the patient and also put bile from some other patient into the jejunostomy and the patient might live for a considerable time that way. However, it was decided that a gastro-enterostomy offered more, and that was performed.

#### CLINICAL DIAGNOSIS

Carcinoma of the gall bladder

DR. RICHARD H. MILLER'S DIAGNOSIS

Carcinoma of the gall bladder

#### ANATOMIC DIAGNOSES

Adenoacanthoma of the gall bladder with invasion and obstruction of the duodenum and metastases to liver and pancreas

Cholecystoduodenal fistula

Acute and chronic diffuse intrahepatic cholangitis

Operative wound posterior gastro-enterostomy

Diaphragmatic hernia

Acute perihepatitis

Atrophy of right kidney

Leiomyoma uteri

#### PATHOLOGIC DISCUSSION

DR. MALLORY The autopsy proved Dr. Miller's diagnosis to be entirely correct. The gall

bladder was represented by a small sac containing only a few cubic centimeters of greenish purulent fluid. Its wall was over a centimeter thick. The tumor had extended directly from the gall bladder into the wall of the adjacent duodenum and in that way produced almost complete obstruction for which Dr. Allen's operation, a gastro-enterostomy, was the reasonable thing to attempt. There was a single metastatic nodule in the left lobe of the liver, but the finer bile ducts throughout both lobes showed extensive cholangitis. The pancreas, as far as we could make out grossly, was normal.

Microscopically the case is of some interest since the cancer of the gall bladder is for the most part a well-differentiated squamous cell carcinoma, a finding that is not at all rare. On the other hand the metastasis in the liver, and I believe it is a metastasis rather than a second tumor, is an adenocarcinoma. That may at first seem almost impossible, but in the gall bladder, metaplasia of the glandular epithelium to squamous epithelium is not uncommon, and in the gall bladder as in the uterus, where the condition is better known, one occasionally sees adenoacanthomas which are in part glandular and in part squamous cell. In looking over the gall bladder carefully one does find occasional glands scattered here and there at wide intervals among the predominant squamous cells and I think that in this instance the metastasis differentiated entirely toward glandular epithelium, whereas the gall bladder tumor had differentiated primarily as a squamous cell carcinoma. There are also in the pancreas a few dilated duct-like spaces filled with mucus and lined with epithelium, essentially similar to the glands found in the liver nodule, so we may assume beginning extension of the cancer into the pancreas. The reason that the patient's jaundice cleared up for a period was that a spontaneous fistula developed through the carcinomatous tissue between the gall bladder and the duodenum, allowing temporary drainage of bile. Still later the cancer must have extended to and blocked the cystic duct, which was completely occluded at the time of the autopsy. The cholangitis undoubtedly provided the infectious element of the clinical picture.

A PHYSICIAN Was there a hernia?

DR. MALLORY There was a large hernial sac which contained over one-third of the stomach and a part of the splenic flexure.

#### CASE 21052

#### PRESENTATION OF CASE

A sixty year old single American woman entered complaining of interscapular pain of two weeks' duration.

Approximately two weeks before entry the patient was seized with a rather sharp pain in the interscapular region which radiated down to the lumbar region. The pain lasted one or two hours and was not accompanied by precordial distress, nausea, vomiting, fever or chills. Since that time she had occasional sharp interscapular pain which rarely radiated to the precordium. Three days before entry it became more severe, was present over the precordium, and was aggravated by deep breathing. It had no relation to meals or activity. During the past two days she had some shortness of breath on exertion. There was no edema, orthopnea, jaundice or swelling of the abdomen.

Her mother died at the age of eighty-one of carcinoma, her father at the age of eighty-two of prostatic disease. Four brothers and two sisters were living and well.

The patient had a thyroidectomy performed seven years before entry, a tonsillectomy sixteen years before entry, and a hysterectomy for fibroids twenty-five years before entry.

Physical examination showed a moderately well-developed and nourished woman. The chest showed moist rales throughout the left lower lobe and a few at the right base. She complained of pain upon deep breathing. The breasts were negative. The heart was enlarged to the left; the sounds were of fair quality. No murmurs were heard. The blood pressure was 120/70. There was tenderness in the interscapular region, axilla and precordium.

The temperature was 98.1°, the pulse 90. The respirations were 15.

Examination of the urine showed a specific gravity of 1.020, a slight trace of albumin and a rare white blood cell. Bence-Jones protein was absent. The blood showed a red cell count of 4,130,000, with a hemoglobin of 70 per cent. The white cell count was 7,000, 76 per cent polymorphonuclears. Two stool examinations were negative. The non protein nitrogen of the blood was 34 milligrams, the calcium 11.8, the phosphorus 4.72 milligrams. A phenolsulphonephthalein test showed only 4 per cent excretion at the end of one and a half hours. The second test showed 10 per cent excretion. An electrocardiogram showed normal rhythm with a slight left axis deviation and a slightly slurred QRS.

X-ray examination of the chest showed that the diaphragm was high on both sides and moved well with respiration. The lungs were clear. The heart was prominent downward and to the left. There was marked tortuosity and calcification of the aorta. Examination of the spine showed that the body of the fifth dorsal vertebra was wedge shaped and markedly narrowed. The body of the eighth vertebra was only slightly narrowed on the right side. There were no definite areas of bone destruction but the left mar-

gins of the ninth and tenth dorsal vertebrae were hazy and more radiant than usual. Films of the pelvis and other vertebrae showed no metastatic foci. All the bones were less dense than normal.

Her temperature remained flat for the next six weeks. Further determinations of the serum calcium were 12.90 and 12.42 milligrams per 100 cubic centimeters and of the serum phosphorus 5.40, 7.12 and 8.8. The non protein nitrogen of her blood began to rise, reaching 85 milligrams on the sixteenth day, 165 milligrams during the sixth week, and 380 milligrams on the day of her death during the seventh week. During the sixth week she developed more rales in her chest. Her temperature rose to 100° and she gradually became disoriented. The urine was positive for Bence-Jones protein for the first time during the fourth week, and a serum protein was 8.8. During the seventh week she developed Cheyne Stokes respiration, marked pulmonary edema and died.

#### DIFFERENTIAL DIAGNOSIS

DR. GRANTLEY W. TAYLOR On the basis of the history, the positive findings are pain in the back of brief duration aggravated by deep breathing and associated in the last two days with shortness of breath on exertion. The mode of onset of pain of this sort is often of considerable significance. Abrupt onset in the course of minor exertion or trauma would raise the question of bone or spine injury. Certainly the history would persuade us to study her lungs, heart, spine and upper abdominal organs with particular attention. A physical examination bears out the fact that there are rales at the bases and pain on deep breathing. These findings alone without discovery of a rub or of a pneumonic process I do not think would explain the pain of which she has complained. The tenderness in the interscapular region would be very difficult to explain on the basis of a pulmonary origin of her symptoms. The chart rules out acute infectious processes. The laboratory findings give us the first evidence of rather severe kidney damage with a trace of albumin in the urine and a very low phenolsulphonephthalein excretion. The non protein nitrogen is somewhat elevated as well as the blood calcium and phosphorus. Electrocardiogram was apparently done to rule out coronary disease with pain and precordial tenderness.

The x-ray examination of the lung and chest rules out pulmonary disease. Examination of the spine introduces the first real explanation of her symptoms. The destructive process in several of the vertebrae and the wedge-shaped collapse of the fifth dorsal vertebra give a complete explanation of the pain in her interscapular region and I surmise that the onset was

associated with a minor trauma or a sudden stain of some sort. At this point we were confronted with a process involving multiple areas of bone destruction and severely impairing kidney function. The commonest type of multiple destructive lesions of the bones is that due to metastatic carcinoma. In the course of our physical examination we failed to find anything suggesting a primary malignancy. It might be reasonable to question these operations which she had had years before. Without more definite information on them than we possess, the thyroidectomy is the only one which might have been carried out for carcinoma and which now might be giving rise to bone metastases even after seven years. It is extremely probable, however, that metastatic disease from this source would have made itself apparent much sooner. The diagnosis of metastatic carcinoma would also fail to explain the severe kidney damage. Hypernephroma with metastases might account for the combination of destructive lesions in the bone and impaired kidney function. It should be expected, however, that the urinary sediment would show evidence of blood and that with established metastases there would be an increased likelihood of finding a palpable renal tumor. Parathyroid adenoma with renal stones could give rise to multiple bone lesions but evidence of this condition should be apparent in numerous other bones and the urinary sediment should show evidence of chronic pyelonephritis to explain such marked kidney impairment. Malignant lymphoma may give rise to bone lesions but there should be evidence of lymphoma elsewhere. The obvious diagnosis which would account for these bone lesions is that of multiple myeloma. In any destructive lesion involving the bone, the radiologist has exact knowledge of the appearance of the lesions and is best able to offer a diagnosis.

The patient's subsequent course and laboratory findings confirm the diagnosis of multiple myeloma. The serum calcium and serum phosphorus both showed marked increases as the disease progressed. Later on a serum protein examination showed a marked elevation which is characteristic of this disease. The presence of the Bence-Jones protein in the urine is valuable confirmation. This may be present in other types of disseminated bone disease but it is much more common in cases of myeloma. The astonishing finding in the course of this terminal illness is the very great elevation of the non-protein nitrogen. Certainly these readings justify the designation of uremia. It is likely that the high serum calcium and phosphorus may also be due in part at least to the defective kidney function. It is worthwhile to consider for a minute

what condition her kidneys will be found in. Amyloid diseases may occur in association with myeloma but usually only after a more protracted course than this patient apparently suffered. Direct metastatic involvement of parenchymal organs may take place in this disease and it is possible that the kidneys have been destroyed by metastases. Finally, even with neither of these two agencies at work we know that myeloma will give rise to extensive degenerative changes in the kidneys which are characteristic. It is probable that this will be found as the sole explanation of the kidney damage.

#### CLINICAL DIAGNOSES

Multiple myeloma  
Uremia

DR GRANTLEY W TAYLOR'S DIAGNOSES

Multiple myeloma  
Uremia  
"Myeloma kidney"

#### ANATOMIC DIAGNOSES

Multiple myeloma  
Fractures of fifth and eighth dorsal vertebrae  
"Myeloma kidney"  
Bronchopneumonia  
Pulmonary emphysema, slight bilateral

#### PATHOLOGIC DISCUSSION

DR TRACY B MALLORY. The postmortem examination showed, as Dr Taylor predicted, the typical lesions of multiple myeloma. There were many scattered tumor nodules throughout the vertebral column and the calvarium, many of which had led to destruction of the bone. The two most important lesions were in the fifth and eighth dorsal vertebrae, where pathologic fractures had occurred, with partial collapse of the vertebrae resulting in kyphosis. In many other areas where frank tumor masses could not be demonstrated the microscopic examination shows a diffuse infiltration of the marrow with typical plasma cells. There was no evidence of tumor invasion of any of the internal viscera. The kidneys, however, showed the classical lesion associated with multiple myeloma. The great majority of the tubules were plugged with extremely dense hyaline casts which occasionally showed early calcification. The tubules behind the points of obstruction tended to be dilated. The glomeruli appeared quite normal. This type of kidney lesion is found in a high proportion of cases which show Bence Jones proteinuria and is generally absent when this material cannot be demonstrated in the urine. The terminal event in the case was an acute bronchopneumonia.

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## MORPHINE, HEAD INJURIES AND ALCOHOLISM

The attention of those practitioners who  
may be in charge of injuries to the head or  
cases of acute alcoholism is respectfully called  
to the letter of Dr. Timothy Leary Medical Ex-  
aminer of the Suffolk County Southern District  
on page 216 of this issue.

If this improper use of morphine were con-  
fined to the ordinary general practitioner who  
only rarely sees such cases there would be less  
occasion for surprise but unfortunately it has  
been found that hospitals of high standing have  
employed morphine unwisely in treating the  
restlessness shown by conditions cited in Dr  
Leary's letter.

This practice is a demonstration of the disin-  
clination of many doctors to read current med-  
ical literature, for this subject has not been  
neglected.

## HEALTH INSURANCE

The movement for prepaid hospitalization as  
one feature of health insurance is well under  
way and making progress in this country. There

are forty or more plans in operation or under  
consideration based on the recommendations of  
the American Hospital Association.

One of the more recently adopted is that of  
the Cleveland Hospital Association with a group  
of civic leaders as trustees and is not operated  
for profit. This Association serves as the execu-  
tive agent for collecting subscriptions and pay-  
ing hospital bills in any of the fourteen hospi-  
tals of the city which are providing service for  
the subscribers. The working capital was pro-  
vided by the Community Chest which was neces-  
sary in advance of individual payments.

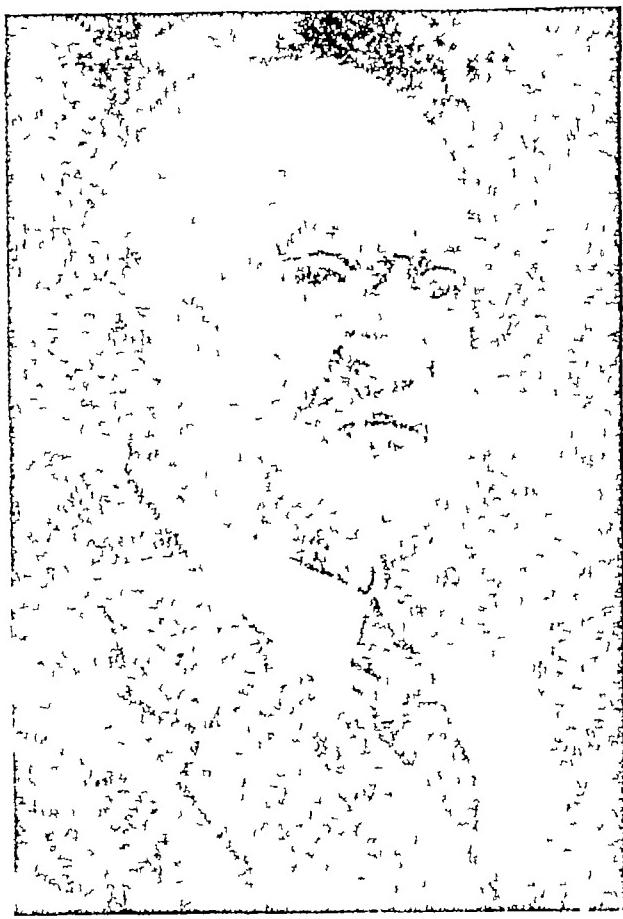
This organized plan has been endorsed by the  
Cleveland Academy of Medicine which has two  
representatives on the board of trustees of the  
Association. The interest of the general public  
is shown by about four thousand subscribers.  
Similar plans in Washington, D. C., New Or-  
leans, Houston, San Antonio, and Dallas are  
under way. The last named city was perhaps  
the earliest to develop this method of budget-  
ing against illness on a large scale and the gen-  
eral endorsement of the people of Dallas is dem-  
onstrated where nearly twenty thousand sub-  
scribers are enrolled.

Elsewhere in the country modifications of  
plans for prepaid hospitalization are in opera-  
tion some including payment for medical serv-  
ice. One of especial interest is that in Okla-  
homa where farmers are getting medical and  
hospital care by the payment of about two dol-  
lars a month per person. Here the operation  
of the fund is carried on by the farmers. If we  
include group practice and various forms of in-  
dustrial contributory insurance, there are about  
two hundred plans in operation in this country  
designed to deal with the unpredictable hazards  
of illness.

The medical profession has been tardy in a  
general showing of interest in health insurance  
partly because there has been a somewhat gen-  
eral condemnation of all such plans by some  
influential professional bodies, this condemnation  
having been based on the experience of some  
foreign countries.

This movement is growing stronger and de-  
mands of the medical profession study as to  
plans which will not exploit the laity and which  
will be fair to physicians. It does not seem im-  
possible that civic organizations should be found  
willing to unite with doctors, and after a study  
of community needs and resources, provide or-  
ganizations operating without profit to inspire  
the low income groups to take advantage of  
wholesome forms of health insurance. The bene-  
fits will be common to patients, hospitals, and  
doctors.

It must be recognized that unless influential  
doctors have very definite influence in shaping  
these plans, much harm will result. We do not  
want legislation formulated and managed by  
politicians. This should be averted by voluntary  
organizations.



## WALTER LINCOLN BURRAGE

It is with a deep sense of loss that *The New England Journal of Medicine* records the death of the secretary of the Massachusetts Medical Society. Within a short period he would have been a member of the Society for fifty years and its secretary for the last twenty-five. Suddenly cut off from an active practice in gynecology by a severe paralytic affection, some thirty years ago, Burrage, with great fortitude, devoted his energies to historical medicine and the arduous and exacting task of keeping the records and minutes for the State Society. No one could have been more faithful in his work, much of it done under the severe handicap of recurring disability. The compiling of the "Directory of the Officers and Fellows", a model of its kind, which always appeared promptly after the beginning of the new year, was no small task. Such devotion to duty should not go unrecorded.

Burrage's fame, however, rests on a broader foundation than his secretaryship. With another gynecologist, Howard A. Kelly, who had a common interest in medical biography, there was published in 1928 the "Dictionary of American Medical Biography", virtually an enlargement of Kelly's "Cyclopedia of American Medical Biography", first issued in 1912. This, the standard work of its kind, was the product of many hands, but to Burrage fell the task of writing not a few of the biographies and a part of the editorship. Thus the spirit of James Thacher and Samuel D. Gross was carried into modern times. Although the great sources for the verifying of references were not at hand, such as have been available to the editors of the new "Dictionary of American Biography", nevertheless, the work of Kelly and Burrage will always remain a creditable performance and a monument to the industry and spirit of the compilers. Burrage, moreover, through his long connection with the Massachusetts Medical Society was able to write the official history of that organization, a volume of outstanding worth.

During the latter years of his life Burrage was confined to his house, except for rare occasions when, in his wheelchair, he attended to his duties as the Society secretary. Energetic as nature allowed him to be, with a decisive mind and a broad interest in all that pertained to medicine, visitors to his home were cordially received. Those who penetrated the inner sanctum found the man tolerant in his understanding of the frailties of life and devoted to the medical profession. Fate had dealt him a severe blow which he met with unusual fortitude. Those who knew him intimately were impressed by his innate generosity and love for the task which fell to his lot in life to perform. As an historian of the American medical profession he will

ANNUAL MEETING OF THE MEDICAL SECTION OF THE MASSACHUSETTS MEDICAL SOCIETY  
TUESDAY, JUNE 4, 1935

THE interest in Medicine is changing. Up to the past two or three years, the interest in clinical work, in laboratory work, and in medical meetings has centered around the results of disease. For example, arteriosclerosis has been studied extensively from the point of view of the organs involved. When it affects the heart a special apparatus and technic have made it possible to identify the location and the extent of the lesion. In the kidney, the extent of damage can now be defined with considerable accuracy. The science of neurology and neuropathology has till now concerned itself almost exclusively with studies of lesions in the brain and cord and of the symptoms to which these lesions give rise. All these studies and many others like them (studies of the liver and pancreas, for example) have advanced medical knowledge to an enormous extent, but it is not enough.

The cause of disease must be known before a really effective treatment can be devised. The time has come to consider Etiology, to see how far the study of pathology and of pathologic physiology has paved the way for a study of etiology and ultimately of treatment.

The program of the Medical Section will, therefore, deal with the Etiology of Chronic Disease. Even though the causes of arteriosclerosis and of arthritis and of many other common ailments are quite unknown, it is worthwhile to review the present meagre knowledge, and thereby, to direct the thoughts of practitioners to this fundamental subject.

The Section is fortunate in having a number of investigators each of whom has had a long experience and is well qualified to discuss Etiology from a particular point of view.

So far, the program in preliminary form appears as follows:

- 1 The Etiology of Degenerative Vascular Disease—Dr Howard B Sprague.
2. The Etiology of Chronic Arthritis—Dr Chester S Keefer
- 3 The Part Played by Industrial Poisoning in Diseases of the Kidney—Dr Alice Hamilton
4. Symptoms Caused by the Abuse of Certain Drugs—Dr Francis T Hunter
- 5 The Value of Routine Physical Examination in the Prevention of Disease—Dr Joseph H. Pratt.

THE RESUMPTION OF THE COLUMN DEVOTED TO OBSTETRICS AND GYNECOLOGY

The Section on Obstetrics and Gynecology of the Massachusetts Medical Society has arranged

to submit a series of brief discussions of conditions which are encountered by practitioners.

These exercises were very much appreciated several years ago, and will give, to those who are interested, concise information which may lead the way to further study.

The Secretary of the Section will arrange for answers to other questions which may be sent in.

THE WAGNER BILL

DR. OLIN WEST, Secretary of the American Medical Association has submitted an abstract of the bill introduced in the U S Senate by Senator Wagner, which appears on page 211 of this issue and should receive careful study by the medical profession.

We suggest that the Committee on State and National Legislation of the Massachusetts Medical Society and all other bodies of organized medicine, place before their members, recommendations for such actions as may be indicated.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

SNYDER, WILLIAM H JR. M.D. Harvard University Medical School 1930 Resident, East Surgical Service, Massachusetts General Hospital. Assistant in Surgery, Harvard Medical School. Address Massachusetts General Hospital Boston Mass Associated with him are

HALL, MARSHALL G. M.D., Columbia University College of Physicians and Surgeons, 1933 House Officer in Pathology, Massachusetts General Hospital Address Massachusetts General Hospital Boston, Mass. And

ALLEN, ARTHUR W. A.B. M.D. Johns Hopkins University School of Medicine 1913 F.A.C.S Instructor in Surgery Harvard Medical School Associate Surgeon Massachusetts General Hospital. Address 264 Beacon Street, Boston, Mass. Their subject is "The Association of Pylephlebitis and Appendicitis." Page 183

ALBRIGHT FULLER, A.B. M.D. Harvard University Medical School 1924 Instructor in Medicine, Harvard Medical School Assistant Physician, Massachusetts General Hospital Address Massachusetts General Hospital, Boston, Mass. Associated with him are

HALSTED, JAMES A. A.B., M.D. Harvard University Medical School 1930 Assistant in Medicine, Massachusetts General Hospital. Address 264 Beacon Street, Boston, Mass. And

CLOVEY ELIZABETH B. S. Technician Biological Laboratory, Massachusetts General Hospital Address Massachusetts General Hospital Bos-

ton, Mass Then subject is "Studies on Ovarian Dysfunction" Page 192

SPENCER, HABEY A.B., M.D. Yale University School of Medicine 1924 Assistant, Department of Pediatrics, Harvard Medical School Assistant, Department of Child Hygiene, Harvard School of Public Health Physician to the Convalescent Home of the Children's Hospital, Wellesley Hills, Mass Consulting Pediatrician, Sherborn Reformatory for Women, Framingham, Mass Psychiatrist, Division of Mental Hygiene, Massachusetts Department of Mental Diseases His subject is "Bronchiectasis as a Source of Scarlet Fever Dissemination" Page 196 Address 572 Washington Street, Wellesley, Mass

BLANK, EDWARD A B, M D Boston University School of Medicine 1933 Formerly House Officer, Mt Sinai Hospital, Hartford, Conn Assistant Resident, Sanatorium Division, Boston City Hospital, Mattapan, Mass Now House Officer, Burbank Hospital, Fitchburg, Mass His subject is "Report of a Case of Strangulation (Torsion) of the Gall Bladder with Perforation and Gangrene in a Boy of Seventeen" Page 197 Address Burbank Hospital, Fitchburg, Mass

BARRY, JOHN R A B, M D Harvard University Medical School 1931 Assistant in Surgery at Boston City Hospital, Out-Patient Department His subject is "Insect Bite Followed by Gas Gangrene in a Diabetic" Page 198 Address 1857 Centre Street, West Roxbury, Mass

EDWARDS, HERBERT R M D College of Medical Evangelists (California) 1918 Director, Bureau of Tuberculosis, New Haven Department of Health Acting Health Officer, New Haven Department of Health Director, Bureau of Tuberculosis, New York City Department of Health His subject is "An Attempt to Secure X-Ray Examination of the Uncooperative Contact" Page 198 Address 139 Centre Street, New York City

### The Massachusetts Medical Society

#### STATED MEETING OF THE COUNCIL

A STATED meeting of the Council will be held in John Ware Hall, Boston Medical Library, 8 Fenway, on Wednesday, February 6, 1935, at 12 o'clock, noon

#### Business

- 1 Call to order at 12, noon
- 2 Reading record of last meeting in abstract.

- 3 Obituaries of Councilors who have died since the last meeting
- 4 Report of Committee of Arrangements for the Annual Meeting next June
- 5 Report of Auditing Committee and of Treasurer
- 6 Reports of Committee on Membership and Finance
- 7 Reports of committees appointed to consider petitions for restoration to the privileges of fellowship,
- 8 Report of Committee on Medical Education and Medical Diplomas
- 9 Appointment of three delegates and three alternates to the House of Delegates, American Medical Association, for two years from June 1, 1935.
- 10 Appointment of delegate to Annual Congress of the American Medical Association on Medical Education and Licensure at the Palmer House, Chicago, February 18 and 19, 1935
- 11 Appointment of two delegates to each of the annual meetings of the five New England State Medical Societies in 1935
- 12 *Incidental Business*

WALTER L BURRAGE, M D, *Secretary*

Brookline, January 30, 1935

Councilors are reminded to sign one of the attendance books before the meeting. The Cotting Luncheon will be served immediately after the meeting

### SECTION OF OBSTETRICS AND GYNECOLOGY\*

THOMAS ALMY, M.D., <i>Chairman,</i> 140 Rock Street, Fall River, Mass	C J KICKHAM, M D <i>Secretary,</i> 524 Commonwealth Avenue, Boston, Mass
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### IS THE "PROPHYLACTIC FORCEPS" PROCEDURE JUSTIFIABLE?

IN 1920 DeLee coined the phrase "prophylactic forceps," and at that time he carefully warned the profession against its widespread use, for he well knew that if this method were widely employed serious damage would occur to mothers and babies. It may be well to recall his advice in regard to this procedure. He stated that there should be perfect spontaneous dilatation of the cervix, head well down onto the pelvic floor, in complete anterior rotation, and that the levator ani pillars should have begun to separate. Having these conditions ful-

\*A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

filled, he advised the incision of the perineum and fascia over the levator pillar and that the child then be delivered by forceps. In other words, he advised a lateral episiotomy as a part of the procedure. He claimed that this method of delivery reduced the muscular and nervous strain of the second stage of labor, that it saved the pelvic floor from overstretching, that it saved the mother's blood and that it saved the baby's brain from evil results of prolonged compression.

If the rank and file of physicians doing obstetrics adopt this method of delivery are these advantages gained? His advice presupposes that the operator is well trained in obstetric technique and in the repair of the incised perineum. With such men, this procedure is entirely justifiable and had been used for years before DeLee used this phrase, "prophylactic forceps". The general practitioner, however, has in the majority of cases had no adequate training in operative obstetrics. He has had only the training that is given him in the medical schools or possibly in a small rotating service where there is inadequate supervision of his operative work and little or no check up of his results. If the general practitioner attempts to carry out this procedure, he is likely to have bad results and the object that he seeks the saving of maternal suffering and pressure on the baby's brain, will not be accomplished. On the contrary, he will oftentimes obtain a deeply lacerated perineum a baby that will in many cases be bruised and badly compressed and frequently the patient will develop sepsis and a long, complicated puerperium may follow.

In all the studies that have recently been made of maternal mortality, the incidence of death following operative procedures has been marked, and although this procedure is apparently simple in many cases, it calls for careful surgical technique, good judgment in applying the forceps, and a complete knowledge of how to repair the episiotomy wound. A low forceps delivery, even when there are good indications, may be difficult, and if the rank and file of general practitioners should begin to carry out this prophylactic forceps delivery, serious results would follow for the mother as well as for the baby.

## LEGISLATIVE NOTES

THE WAGNER BILL—SOCIAL INSURANCE  
AN ABSTRACT OF S. 1130 INTRODUCED IN THE U. S.  
SENATE BY SENATOR WAGNER, NEW YORK TO ALLEVIATE THE HAZARDS OF OLD AGE, UNEMPLOYMENT,  
ILLNESS, AND DEPENDENCY TO ESTABLISH A SOCIAL  
INSURANCE BOARD IN THE DEPARTMENT OF LABOR, TO  
RAISE REVENUE, AND FOR OTHER PURPOSES

### TITLE I. OLD AGE ASSISTANCE

For the fiscal year ending June 30 1938 there is appropriated \$50 000 000 and for each fiscal year

thereafter \$125 000 000 99½ per centum of which is to be allotted to the several States to provide financial assistance assuring a reasonable subsistence comparable with decency and health to persons not less than sixty five years of age who at the time of receiving such financial assistance are not inmates of public or other charitable institutions. State plans must be approved by the Federal Emergency Relief Administration. The amount that is to be allotted to each State is dependent on the sum made available for similar purposes by the State and its political subdivisions.

### TITLE II. AID TO DEPENDENT CHILDREN

For the fiscal year ending June 30 1938 and for each fiscal year thereafter there is appropriated \$25 000 000 nor more than 99½ per centum of which is to be apportioned among the several States to provide aid to children under the "age of sixteen in their own homes in which there is no adult person, other than one needed to care for the child or children who is able to work and provide the family with a reasonable subsistence compatible with decency and health". State plans must be accepted by the Federal Emergency Relief Administration. The federal allotment to each State is to be one-third of the amount made available by the State and its political subdivisions for similar purposes.

### TITLE III. EARNINGS AND EMPLOYMENT TAXES

Beginning January 1 1937 an earnings tax is to be imposed on every employee except on a non manual worker whose monthly salary is more than \$250.

Likewise an employment excise tax is to be imposed on every employer at a rate of one-half of 1 per centum of the pay roll of such employer as of January 1, 1937 and increasing until the rate reaches two and one-half per centum of the pay roll as of January 1 1957.

The taxes so collected are to form a part of an old age fund.

### TITLE IV. SOCIAL INSURANCE BOARD

In the Department of Labor there is established a Social Insurance Board, composed of three members appointed by the President.

The Board with the approval of the Secretary of Labor may appoint and fix the compensation of such officers, attorneys and experts as may be necessary to carry out its functions, without regard to the civil service laws and the Classification Act of 1923.

The duties of the Social Insurance Board are to be, in part

(a) To study and make recommendations as to the most effective methods of providing economic security through social insurance and as to legislation and matters of administrative policy concerning old age insurance, unemployment compensation, accident compensation, health insurance and related subjects.

- (b) To supervise and direct the payment of old age annuities under a national contributory old age insurance system, and
- (c) To assist the states in the administration of unemployment compensation laws

For the fiscal year ending June 30, 1936, there is appropriated \$5,000,000, and for each fiscal year thereafter \$50,000,000, 98 per centum of which is to be apportioned by the Social Insurance Board to the several States which have certain types of unemployment compensation laws, the apportionment to be on the basis of need for financial assistance in the proper administration of such laws

*Old Age Annuities* — Beginning January 1, 1942, the bill provides for the paying of old age annuities to persons not less than sixty five years of age, who qualify under the bill. The amount to be paid each annuitant will be an amount equal to a percentage of his average monthly wage

#### TITLE V ANNUITY CERTIFICATES

The Social Insurance Board is authorized to borrow from time to time, on the credit of the United States, for the purpose of increasing the old age fund, such sums as in its judgment may be desirable, and to issue therefor, at such prices and upon such terms and conditions as it may determine annuity certificates

#### TITLE VI UNEMPLOYMENT FUND

This title proposes to establish an unemployment fund and to collect annually from every employer of at least four persons an excise tax, measured by an amount equal to three per centum of the employer's pay roll. An employer may credit against this tax, up to 90 per centum of the tax, the amount of his contributions to any unemployment fund under any state law. Each State is to have an undivided interest in this unemployment fund and may requisition any part of the money held in trust for it.

#### TITLE VII MATERNITY AND CHILD WELFARE

For the fiscal year ending June 30, 1936, and for each fiscal year thereafter, there is appropriated \$4,000,000 to enable the Federal Government to co-operate with the State agencies of health in extending and strengthening services for the health of mothers and children, especially in rural areas and in areas suffering from severe economic distress

This appropriation is to be administered by the Department of Labor. Ninety-five per centum of the appropriation is to be allocated for the furthering and strengthening of "State and local health services to mothers and children, extending maternity nursing services in countries predominantly rural, and conducting special demonstration and research in maternal care and other aspects of maternal and child health service."

For each fiscal year, the sum of \$20,000 is to be allotted to each State by the Secretary of Labor and the sum of \$1,000,000 is to be apportioned among the States in the proportion which the number of

live births in each State bears to the total number of live births in the United States as determined annually by the latest available statistics for the United States Birth Registration Area

The Secretary of Labor may, further, apportion \$800,000 "among States unable, because of severe economic distress, to match by themselves in full the amounts made available" under the preceding paragraph, for their use in matching such sums

The remainder of the appropriation is to be allocated by the Secretary of Labor for special demonstration and research in maternal care in rural areas, and in other aspects of maternal and child health

To receive its allotment a State must make available a similar amount, except under certain circumstances, and, through its state agency of health, must submit to the Children's Bureau a state plan which must include "reasonable provision for state administration and supervisory services, for furthering local maternal and child health services administered by local public health units for State financial participation, and for cooperation with medical, nursing and welfare groups and organizations, and must give due consideration to the development of demonstration services or services of a more permanent character in rural and other needy areas or among groups of the population in special need"

If the Chief of the Children's Bureau deems the submitted plan "in accordance with accepted standards of public-health practice developed by Federal Bureaus and other agencies," the plan may be approved and the State may thereby qualify for federal aid

*Care of Crippled Children* — For the fiscal year ending June 30, 1936, and for each fiscal year thereafter, there is appropriated \$3,000,000, to be administered by the Department of Labor, to enable the Federal Government to cooperate with state agencies concerned with providing medical care and other services for crippled children.

The sum of \$20,000 is to be allotted by the Secretary of Labor to each State, and the remainder, less administrative expenses, is to be apportioned among the States "on the basis of need as set forth in plans developed by the state agencies concerned and approved by the Children's Bureau"

Except in severe economic distress or other exceptional circumstances, no allotment to a state shall exceed the sum made available by the State for similar purposes

State plans must be approved by the Chief of the Children's Bureau and must include "reasonable provision for state administration, adequate medical care, hospitalization and after care, and co-operation with medical, health, and welfare groups and organizations"

*Aid to Child Welfare Services* — For the fiscal year ending June 30, 1936, and for each fiscal year thereafter, there is appropriated the sum of \$1,500,000, to be administered by the Department of Labor,

for co-operation with the state agencies of public welfare in extending and strengthening especially in rural areas and areas suffering from severe economic distress, welfare service for the protection and care of homeless dependent, and neglected children and children in danger of becoming delinquent.

The sum of \$10 000 is to be allotted to each State by the Secretary of Labor and \$1,000 000 is to be apportioned among the States in the proportion in which their population bears to the total population of the United States. No allotment may be made to a State in excess of the sum made available by the State for similar purposes.

The remainder of the appropriation less administrative expenses is to be apportioned by the Secretary of Labor among the States unable because of severe economic distress to match in full the amounts allotted under the preceding paragraph to be used by such States in matching such sums, or for special demonstrations of methods of community child welfare services.

To receive financial aid, a State must submit plans, acceptable to the chief of the Children's Bureau.

#### TITLE VIII. APPROPRIATIONS FOR PUBLIC HEALTH

For the fiscal year ending June 30 1936 and for each fiscal year thereafter there is appropriated the sum of \$10 000 000 to be administered by the Bureau of the Public Health Service.

The Bureau of the Public Health Service is to allot, annually, \$8 000 000 to the several States in amounts determined on the basis of the need of each State for such assistance, to develop state health services including the training of personnel for state and local health work and for the purpose of assisting counties or other political subdivisions of the States in maintaining adequate public health programs.

The sum of \$2 000 000 is annually to be made available to the Bureau of the Public Health Service "for the further investigation of diseases and problems of sanitation and related matters."

### MASSACHUSETTS LEGISLATIVE NOTES

House Bills 59, 60 and 756, also Senate 52 have been approved by the Committee on State and National Legislation of the Massachusetts Medical Society. The text of House Bills 59 and 60 appeared in full on page 77 issue of January 10.

Senate 52 is the petition of Charles G. Miles that security be provided to hospitals and physicians in the enforcement of reasonable charges for treatment of certain personal injury cases. The text of this bill appears on page 75 issue of January 10.

The hearing on Dr. Miles' bill (Senate 52) together with the several bills on the subject of assuring payment to hospitals and physicians for the care of accident cases other than those coming under the Workmen's Compensation Act was conducted January 29. The efforts of the Committee on State and National Legislation of the Massachusetts Medical

Society brought out a large attendance and the subject matter was carefully reviewed from all angles by many speakers.

With Dr. Miles as a member of the Senate, there seems to be ground for expecting favorable action by both houses. Doctors from all sections of the State were present, which is a demonstration of the possibility of having the profession represented at hearings relating to a common interest.

House 756 is a redraft of the bill which has been submitted regularly for many years and which relates to the qualifications of applicants for registration as practicing physicians. This bill is designed to enable the Board of Registration to require that medical schools whose graduates are applicants for registration must be approved by the Board. The purpose of this bill is to give the Board an opportunity to determine the quality of instruction given in medical schools from which applicants apply so that those who receive the endorsement of the Board shall be recognized as having been adequately prepared to practice medicine in this Commonwealth.

Among the bills which have not been approved by the Committee on State and National Legislation of the Massachusetts Medical Society is House 528 which provides that a physician shall not remove any limb or organ of the body from a patient, without first obtaining consent of such patient, if the patient is mentally and physically capable of giving such consent otherwise he shall obtain the consent of the patient's husband or wife or nearest available relative or of the patient's parents or guardian. If the patient is unconscious whereby he could not or cannot know of any necessary operation and no relative husband or wife or guardian is within call, the physician may proceed upon his own judgment, if it is necessary to do so for the patient's safety. There are many provisions in the bill which seem unnecessary and which might operate to the disadvantage of the physician and the patient.

House 623\* provides that no person shall be required to submit to any form of vaccination or inoculation as a condition precedent to admission to any school institution of learning or public institution nor to the exercise of any right, performance of any duty or enjoyment of any privilege. Section 2 of this bill reads "Section fifteen of chapter seventy six and section one hundred and eighty-one to one hundred and eighty-three, inclusive of chapter one hundred and eleven of the General Laws and all acts in amendment thereof and in addition thereto are hereby repealed."

House 755\* is designed to remove from the present law the compulsory features of vaccination unless the physician as a condition precedent supplies said person with a written statement signed by said physician guaranteeing the purity of the virus to be used. Any physician vaccinating a child or adult without the consent of the child's parents or guardians or the consent of the adult, shall be personally liable for all injuries resulting therefrom.

\*Not approved by the Committee on State and National Legislation of the Massachusetts Medical Society

House 1458\* is designed to authorize the Governor to appoint three persons who shall constitute a board of magnetic healers for the purpose of examination and registration of such applicants

House 717\* is designed to provide for the inspection by injured employees of medical reports of insurers' physicians and of hospital reports on file with the department of industrial accidents

H 447 is another bill to assure compensation for physicians in cases of inquiry, aside from services coming under the workmen's compensation act

H 70 designs to amend Section 34 of Chapter 152 as amended by Section 7, Chapter 309, of the General Laws, in order to secure payment equal to two-thirds of the average weekly wages, not to exceed eighteen dollars, nor less than nine dollars a week to injured employees

H 352. This seeks to have the law relating to Narcotic Drugs amended so as to make uniform the provisions governing the use and distribution of such drugs

This bill requires careful study

H 351 is for the purpose of amending section 35 of chapter 112 of the General Laws so that sections 30 and 37 to 41, inclusive, shall not apply to physicians who put up their own prescriptions or dispense medicines to their patients, nor to the sale of drugs, medicines, chemicals or poisons by wholesale dealers or manufacturing chemists to retail dealers, nor to the manufacture or sale of patent and proprietary medicines, provided those intended for internal use do not contain salicylic acid, barbituric acid, acetanilid, phenol bromine, iodine, their salts or derivatives

H 307 This bill under the petition of Frank L Whipple seeks to have authority granted to change the name of the Middlesex College of Medicine and Surgery, Inc., to that of Middlesex College and also to give the latter named institution the authority to grant the degree of bachelor of science

The text of the bill is as follows

The name of the Middlesex College of Medicine and Surgery, Inc., an educational institution incorporated under chapter twenty-eight of the acts of eighteen hundred and forty-nine under the name of the Worcester Medical Institution, and whose name was changed to its present one under general law, December fifteen, nineteen hundred and fourteen, is hereby changed to Middlesex College, and said corporation is hereby authorized and empowered, in addition to its present powers, to conduct and maintain in the county of Middlesex a college for academic education and to provide therein instruction in such of the sciences, liberal arts, and languages, as the trustees of said corporation shall determine, and said corporation is hereby further authorized to confer the degree of bachelor of science on such of its graduates as are properly accredited and recognized by the majority of its trustees, provided, that the course of instruction leading to such de-

gree shall occupy the same number of years as are required in similar institutions granting said degree

The Department of Education respectfully recommends that the petition be not granted.

The hearing on this bill may prove to be of interest to all who are concerned with medical education

#### A DANGEROUS BILL

House 1400—The petition of Representatives Carnay and Grant to provide establishment and administration of a system of health insurance for benefit of employees Assigned for hearing February 7 at 10 30 A.M (Room 427), before the Committee on Labor and Industries Doctors from all sections of the State should be present

#### MISCELLANY

##### AMERICAN SCIENTISTS INVITED TO VISIT MOSCOW

##### LENINGRAD AND MOSCOW UNITE IN PROGRAMS TO ENTERTAIN VISITING SCIENTISTS

Members of the Federation of American Societies for Experimental Biology have been advised by their President, Dr W A Howell of Johns Hopkins University, of the invitation extended by their Soviet colleagues to attend the Fifteenth International Physiological Congress to be held in Russia next summer The convention will begin in Leningrad on August 8 and after an eight day visit to scientific institutions in that city will adjourn to Moscow where the meeting and discussions will continue until the Congress terminates on August 18

"The Russian scientists are preparing to extend a hearty welcome to their fellow-workers from America," states A K Dawson, Manager of the Russian Travel Division of the American Express Company, who has just returned from a nine weeks' inspection tour of the travel facilities of the Soviet Union, and whose company is co-operating with the Soviet Travel Bureau in making arrangements for the trip "This Moscow Convention promises to be the outstanding scientific gathering of the year," says Mr Dawson

The Federation of American Societies for Experimental Biology includes the members of the following societies The American Physiological Society, The American Society of Biological Chemists, The American Society for Pharmacology and Experimental Therapeutics, and The American Society for Experimental Pathology The following scientists are on the executive committee of the Federation Charles W Greene, A.M., Ph.D., Professor of Physiology and Pharmacology, University of Missouri, Columbia, Mo., Frank C Mann, M.A., M.D., Director, Division of Experimental Surgery and Pathology, Mayo Clinic, Professor of Experimental Surgery and Pathology, Mayo Foundation, Rochester, N.Y., W M Clark, M.A., Ph.D., Professor of Physiological Chemistry, Member of the National Academy of Sciences, Johns Hopkins University, Baltimore, Md., Henry A Mattill, A.M., Ph.D., Professor of Biochem

\*Not approved by the Committee on State and National Legislation of the Massachusetts Medical Society

Istry State University of Iowa, Iowa City Iowa	peutics Johns Hopkins University Medical School
Cyrus H. Fiske M.D. Associate Professor of Bio-logical Chemistry Harvard Medical School, Boston	Baltimore, Md. S. Burt Wolbach M.D. Shattuck Professor of Pathological Anatomy 25 Shattuck Street, Boston Mass. Shields Warren A.B., M.D.
Mass. Robert A. Hatcher Ph.M. M.D. D.Sc., Pro-fessor of Pharmacology Cornell University Medical College, 1300 York Avenue New York N.Y.	Pathologist New England Deaconess Hospital and Huntington Memorial Hospital, Instructor in Pathol-ogy Harvard Medical School Palmer Memorial Hos-pital, 195 Pilgrim Road, Boston Mass.
E. M. K. Gelling M.S., M.D., Ph.D., Associate Profes-sor of Pharmacology and Experimental Thera	

## MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

## DIPHTHERIA CASES REPORTED FROM CITIES AND TOWNS OVER 10,000 POPULATION

## How Does Your Community Stand?

City or Town	1934 Estimated Population	1928	1929	1930	1931	1932	1933	1934	1934 Case Rate*
Massachusetts	4,339,910	4,052	4,455	3,322	2,381	1,811	1,041	628	14.5
Lowell	91,729	116	65	31	0	38	71	76	82.9
Somerville	108,040	143	124	179	119	64	63	54	50.0
Revere	37,733	17	51	29	38	9	11	15	39.8
Peabody	22,593	13	21	24	57†	19	13	8	35.4
Lynn	101,878	172	195	191	106	57	28	32	31.5
Chelsea	44,604	18	55	56	42	44	10	14	31.4
Medford	69,960	39	87	47	64	39	41	20	28.8
Fall River	103,646	117	120	117	100	41	34	29	28.0
New Bedford	106,732	258	228	160	118	78	73	27	25.3
Gloucester	24,899	24	14	3	3	1	3	6	24.1
Wakefield	16,910	8	29	10	2	2	5	4	23.7
Southbridge	13,227	13	9	3	0	5	0	3	22.7
Beverly	27,125	5	18	44	7	3	1	6	22.1
Arlington	45,564	15	18	23	8	19	9	10	21.9
Malden	63,320	23	91	24	63	23	11	12	18.9
Lexington	10,893	0	1	7	3	10	1	3	18.4
Athol	11,690	0	1	1	0	16	5	2	17.3
Framingham	23,160	1	6	3	0	2	0	4	17.3
Needham	12,420	1	3	6	1	3	3	2	16.1
Quincy	82,115	20	17	7	10	26	25	13	15.8
Chicopee	45,664	31	40	21	20	8	3	7	15.3
Wellesley	13,463	3	2	1	0	10	2	2	14.9
Boston	782,618	898	1,101	863	701	540	207	114	14.6
Danvers	13,935	4	20	18	4	5	5‡	2	14.4
Attleboro	22,738	19	23	6	7	10	6	3	13.2
Cambridge	108,523	246	144	91	53	69	50	14	12.9
Worcester	199,180	269	195	213	117	102	54	23	11.5
Salem	43,800	70	20*	133	60	52	18	5	11.4
Braintree	17,841	9	7	5	4	2	1	2	11.2
West Springfield	17,831	42	10	8	0	1	3	2	11.2
Belmont	27,251	21	11	6	11	6	2	3	11.0
Woburn	20,332	37	33	9	9	7	6	2	9.8
Watertown	43,931	25	35	7	3	13	9	4	9.3
Fairhaven	11,053	9	13	15	11	11	5	1	9.0
Taunton	35,744	8	3	5	38	14	16	3	8.4
Weymouth	23,960	8	12	5	8	7	14	2	8.3
Fitchburg	38,215	27	64	18	10	11	2	3	7.9
Melrose	25,720	15	10	10	8	14	0	2	7.8
Plymouth	12,034	10	3	11	9	3	2	1	7.7
Everett	53,775	48	106	63	103	47	15	4	7.4
Natick	14,190	6	2	3	2	0	0	1	7.0
Waltham	43,065	38	13	4	4	15	4	3	7.0
Haverhill	48,268	44	57	72	6	13	12	3	6.3
Pittsfield	52,045	31	54	8	3	3	2	3	5.8

## MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

(Concluded)

City or Town	1934 Estimated Population	1928	1929	1930	1931	1932	1933	1934	1934 Case Rate*
Winthrop	17,433	8	7	1	4	3	4	1	57
Lawrence	77,934	41	31	16	13	3	3	4	51
Milton	19,460	5	0	4	3	3	2	1	51
Methuen	21,455	8	4	4	2	2	0	1	47
Newton	75,660	14	8	3	1	6	13	2	26
Brookline	51,574	4	5	16	9	7	1	1	19
Springfield	156,535	348	268	133	39	17	9	3	19
Brockton	62,488	59	25	23	48	11	15	1	16
Holyoke	53,310	62	36	5	3	2	3	0	00
Northampton	24,580	13	12	45§	4	2	2	0	00
Leominster	21,550	0	2	3	0	13	0	0	00
North Adams	20,695	8	1	2	1	0	3	0	00
Westfield	20,140	23	10	7	2	0	0	0	00
Gardner	19,964	4	2	3	1	0	1	0	00
Saugus	16,361	36	7	6	6	1	1	0	00
Dedham	16,186	5	2	3	1	0	3	0	00
Norwood	15,807	2	3	5	2	2	0	0	00
Greenfield	15,710	28	9	5	4	2	0	0	00
Marlboro	15,037	17	6	2	4	13	1	0	00
Milford	14,711	13	10	1	1	3	0	0	00
Newburyport	14,623	2	57	84	13	14	1	0	00
Winchester	13,695	5	6	7	18	5	0	0	00
Webster	12,656	1	13	1	0	2	0	0	00
Amesbury	12,463	2	15	10	11	1	1	0	00
Adams	11,996	8	10	17	11	6	1	0	00
Clinton	11,658	1	1	0	1	1	0	0	00
Swampscott	11,525	29	11	6	5	5	1	0	00
Easthampton	11,099	1	10	2	0	0	0	0	00
Stoneham	10,884	1	14	10	2	1	0	0	00
Reading	10,678	0	2	17	1	1	1	0	00
North Attleboro	10,535	22	0	0	0	0	1	0	00

\*Case rate per 100,000 population.

†Included 25 cases which occurred in a short outbreak in a single school.

‡All cases in State Hospital.

§Included 39 cases in State Hospital.

||One case in State Hospital.

**CORRESPONDENCE****MORPHINE, HEAD INJURIES AND ALCOHOLISM**

The Commonwealth of Massachusetts  
 Office of the Medical Examiner  
 Suffolk County, Southern District  
 784 Massachusetts Avenue

Boston, January 14, 1935

Editor, *New England Journal of Medicine*,

I have repeatedly observed in my experience as medical examiner the unfortunate effects which arise from the use of morphine in cases of cranial traumatism, and in conditions associated with edema of the brain. Dr Munro\* has stressed the harmful results which follow the exhibition of morphine in connection with head injuries. In spite of his protests against its use cases are not infrequently com-

ing into my hands in which the fatal issue was accelerated, and in some was due apparently directly to the use of morphine, no injury adequate to cause death being found.

There is also a tendency to use morphine to control restlessness and even to abate delirium in alcoholism. The control is unfortunately too efficient in some cases. We recognize that both alcohol and morphine are depressants. In fatal morphinism as in fatal alcoholism there is found as an outstanding lesion edema of the brain. The tendency of morphine to produce or to accelerate the production of cerebral edema should lead to its elimination from therapeutic agents indicated in conditions associated with this form of edema or likely to eventuate in it, either in the young or the old. Paraldehyde or the barbiturates are safer, though even the latter should be used with caution.

\*Munro Donald The Diagnosis, Treatment and Immediate Prognosis of Cerebral Trauma. New Eng. J. Med. 210:292 (The Use of Morphine) Feb 8 1934

Yours sincerely,

TIMOTHY LEABY, M.D.

**BILLS RELATING TO LIENS IN TORT CASES**

January 26 1935

Editor *New England Journal of Medicine*

I should like to advise the members of our various County Medical Societies in Massachusetts through our official *Journal*, of the fact that there are several bills before the Legislature dealing with Liens on Tort Cases for physicians hospitals and nurses and that it is very necessary for all physicians, hospitals and nurses to take an active interest in these bills, by getting in touch with their Representatives and Senators either by personal contact, by presence at hearing by telephone or by post card informing these legislators that they are in favor of House Bill or Senate number so and so for which they should kindly interest themselves and *Vote* for

It is not necessary for me to go into these matters at length. Practically every physician, hospital and nurse knows that they have rendered faithful services to persons injured in accidents, and for which claims damages for injuries were paid by insurance companies and it was understood by the insurance companies that the physician hospital and (where private nursing was necessary) nurse were to be paid from the settlement made to the injured person were not paid. This condition has existed long enough and besides some lawyers and patients are even more brazen than ever. This unfortunate state of affairs must be stopped and the opportunity is at hand. It can be done now by proper interest and enthusiasm on the part of physicians hospitals and nurses as outlined above.

There are eleven states in this country to-day using a Lien Law and apparently working successfully. The states are as follows: Delaware, Montana, Nebraska, New Jersey, Oregon, Virginia, Arkansas, Indiana, Minnesota, Texas and Iowa. In some of these states the wording of the law varies slightly. Two years ago when I had a petition introduced, there were only eight states using a Lien Law. Since then three more states have adopted this plan. There must be merit to it, and therefore it is but reasonable that Massachusetts should enact a similar law at once.

The Medical Profession for all the kindness good self-sacrifices, and contributions to charity does not deserve mistreatment and being fleeced by unscrupulous lawyers and ungrateful patients.

Several bills have been introduced in the Massachusetts Legislature this year and they are coming up shortly. They are as follows (all dealing with Liens for Physicians and Hospitals and some include nurses):

Senate Bill 52 by Senator Charles G. Viles.

House Bill 447 by R. C. Seed.

House Bill 511 by John E. Murphy

House Bill 1105 by The Massachusetts Relief Officers Association.

House Bill 1109 by Henry M. Landesman.

House Bill 1267 by Frank Ramacorti

Bill 1276 by Leo D. Walsh, which deals with another phase of Tort Settlements.

Last year as a member of the Landesman Committee on Economics of the Norfolk District, the Committee called upon the Insurance Company Superintendents and Directors at my suggestion, and had conferences with them. Practically all of these men were willing to cooperate with the medical profession, especially so since they feel that they pay for medical services rendered in their settlements and therefore see no reason why such bills are not paid when settlements are made.

House Bill 1109 prepared by me with the advice of Dr. Wm. C. Woodward LL.M. Director of the Bureau of Legal Medicine and Legislation of the American Medical Association, is based upon the Acts enacted in the other states and functioning. It is similar to House Bill 519 which I had introduced in 1933. It is as follows:

House No. 1109

By Mr. Zimon of Boston (by request) petition of Henry M. Landesman relative to liens of physicians, nurses and hospitals for services rendered in treatment of injuries for which patients receive compensation. Judiciary (Joint)

The Commonwealth of Massachusetts

In the Year One Thousand Nine Hundred  
and Thirty Five

An Act relative to Liens of Physicians, Nurses and Hospitals for Services rendered in the Treatment of Injuries for which the Patient receives Compensation.

Be it enacted by the Senate and House of Representatives in General Court assembled and by the authority of the same as follows:

Whenever any person shall employ a physician, nurse or hospital to perform professional service or services of any nature in the treatment of or in connection with an injury and such injured person shall claim damages from the party causing the injury such physician, nurse or hospital, as the case may be, shall have a lien upon any sum awarded the injured person in judgment or obtained by settlement or compromise on the amount due for the reasonable value of services necessarily performed provided, that no such lien shall be valid against anyone coming under the workmen's compensation act. In order to prosecute such lien it shall be necessary for such physician, nurse or hospital to serve a written notice upon the person or corporation from whom damages are claimed that such physician, nurse or hospital claims a lien for such services and stating therein the amount due and the nature of such services provided that whenever an action is pending in court for the recovery of such damages, it shall be sufficient to file the notice of such lien in the pending action.

If the Physicians, Directors or Superintendents and Staffs of Hospitals and nurses do their part as suggested above the petitioners of the various Bills before the legislature will get together at request of our Legislative Director Dr. O'Brien who is ill at

present, or Dr Begg, and concentrate on one of them, for none of us, I believe, are looking for glory. We are looking for results for all.

I, personally, wish to express my sincere gratitude and appreciation to the other petitioners, especially to our good friend, Senator Charles G Miles, for their earnestness and endeavor to right a grievous and uncalled for wrong to noble and kindly professional men and women.

As Marcus Aurelius well said, "Do not put over for to-morrow things you should do to-day, for to-morrow never comes."

Let us all put our shoulders together to put this over. *We Can Do It and Now*

Respectfully yours,  
H M LANDESMAN, M D

NOTE Hearings on bills relating to this subject were conducted Tuesday, January 29 Ask your Representative as to his attitude

#### THE DECLINE OF DIPHTHERIA IN MASSACHUSETTS

The Commonwealth of Massachusetts  
Department of Public Health  
State House, Boston

January 21, 1935

Editor, *The New England Journal of Medicine*,

In your letter of January 16 you inquire as to whether the decline in diphtheria shown in the recent tabulation sent to you\* could be attributed to greater use of diphtheria immunization. This is, I am confident, the explanation for the decline that has occurred and also for the differences that exist between the various cities. In general it can be said that those cities that are doing the most immunization work have the lowest diphtheria rates and those that have been less active in this regard have the highest rates. The only exception to this statement is to be found in the fact that there are, normally, waves of diphtheria, which were even more marked before immunization work began than they are to-day. Consequently, if the figures for a single year are taken, it is perfectly possible for a community where there is relatively little immunization work going on to have for one or more years a relatively low record. Such a community, however, inevitably experiences a recrudescence of the disease, a phenomenon which is not seen in well immunized communities.

In an article entitled "Diphtheria Immunization and the Private Practitioner" written by Dr Bigelow and me and published in the April 13, 1933 issue of the *Journal*, it was shown that taking the cities as a whole and considering them over a period of years a very definite correlation existed between the amount of immunization work carried on and the subsequent incidence of diphtheria.

With further reference to the tabulation that was

\*See page 215

sent to you, it should be said, out of fairness to some of the cities, that during 1934 more active immunization work was carried on than in previous years but too late to affect the record for the year. This will, of course, show up in the 1935 figures. The figures in the table are, then, the result of the immunization status of the community as it existed at the beginning of 1934.

Very truly yours,

GAYLORD W ANDERSON, M D, Director,  
Division of Communicable Diseases

#### THE USE OF DIGITALIS

January 16, 1935

Editor, *New England Journal of Medicine*,

I have read with much interest Dr Christian's "Historical Note" in *The New England Journal of Medicine* of January 10, 1935

In Thacher's "New Dispensatory," second edition, Boston, 1813, the work of Withering in connection with digitalis is mentioned at considerable length, his name being mentioned no fewer than six times.

The preparation first mentioned by Thacher is the powder of the dried leaves of which "the medium dose is half a grain"

"Given in substance" (powder) "there is supposed to be rather more risk of its effects accumulating from repetition of the dose. To obtain the full narcotic" (as opposed to diuretic) "operation of fox glove the dose given at first requires to be gradually increased, but this increase must be made with much caution"

Thacher's work was recommended by Drs John Warren, Aaron Dexter, and Josiah Bartlett, members of a committee appointed by the Massachusetts Medical Society to examine Thacher's manuscript.

I have no access to Pratt's article (*J A M A*, 1918) but I question the accuracy of his reference to Austin Flint. Having heard Flint's last course of lectures, I am sure he emphasized the value of digitalis in cardiac failure. In his "Clinical Medicine" (1879) he says (page 223) "digitalis is indicated especially when the heart's action is feeble, rapid, and irregular. The relief of dyspnoea and other symptoms is sometimes remarkable." In his "Practice of Medicine," sixth edition, 1886, page 340, he says, "irregularity, undue frequency and feebleness of the heart's action call for treatment."

Digitalis is an invaluable remedy. Digitalis in moderate doses (a grain or two of the leaves, two or three drachms of the infusion) may be continued with advantage for a long period."

Bartholow ("Therapeutics," fifth edition, 1885, page 425) says of digitalis, "The infusion is the best form in cases of cardiac disease with dropsy the powder of the leaves may be given in pill form"

All of which is respectfully submitted

Very truly yours,

HENRY O SMITH, M D  
Hudson, New Hampshire

SUPPORT OF SENATE BILL 52  
January 25 1935

Dr Charles G Miles  
*My dear Senator*

I beg to advise you that at a meeting of the Public Relations Committee of the Massachusetts Medical Society held on January 23 it was voted that the Public Relations Committee contribute its support to the Lien Bill which you are sponsoring (Senate 53) Also I am glad to be able to advise you that the Greater Lawrence Medical Club the Gale Hospital Staff and the Essex North District Medical Society adopted resolutions to the same effect and I believe that we can guarantee a substantial body of the profession from this district who will be at the hearing when it is held.

With best wishes I am

E. S BAGNALL, M.D., Secretary  
Public Relations Committee  
Massachusetts Medical Society

## RECENT DEATHS

BURRAGE—WALTER LINCOLN BURRAGE, M.D. Secretary of the Massachusetts Medical Society for twenty five years died at his home 182 Walnut Street, Brookline, January 26 1935. He was born in 1860 graduated from Harvard College in 1883 and the Harvard Medical School in 1888 and after preparing himself for the specialty of gynecology began practice in Boston in 1890.

He joined the Massachusetts Medical Society in 1886. He was soon recognized as qualified for a brilliant career but after a few years of active work was obliged to retire from practice, because of a disabling illness which affected his ability to walk, but did not prevent devoting his talents to literary work and research. Among his productions were a history of the Massachusetts Medical Society a catalogue of the Honorary and Past and Present Fellows of the Massachusetts Medical Society 1781-1931, Gynecological Diagnosis, and the Dictionary of American Medical Biography.

He was a director of the Industrial School for Crippled and Deformed Children, Secretary of the Boston Medical Library for thirty years and Secretary for the Medical Section of the Massachusetts Branch of the Council for Defense during the World War.

He is survived by his widow Mrs Sally (Swan) Burrage a son Dr Walter S Burrage and two daughters Miss Ruth Burrage and Miss Sally Burrage.

NORTON — JAMES JOSEPH NORTON M.D., of Westfield Mass., died in St Francis's Hospital, Hartford Conn., January 19 1935 after a long illness which had interrupted his practice for much of the time since 1931.

He was born in Leo, Mass. the son of James and Julia (Barrett) Norton, in 1881 and was a graduate of the Leo High School and Holy Cross College.

He received his M.D. degree from New York University and Bellevue Medical College in 1908 and completed an internship in Mercy Hospital Springfield, Mass. He then began practice in Westfield where he built up a large general and consultation practice. In 1911 Dr Norton was appointed a member of the Noble Hospital Staff and in 1921 he was transferred from the Medical to the Surgical Service. He was recognized as an ethical practitioner to a high degree.

In 1914 he married Miss Ann M Sceery of Hartford, Conn., and in 1928 joined the Massachusetts Medical Society. He was also a Fellow of the American Medical Association and a member of the Westfield Medical Society the Elks, Order ofibernians Knights of Columbus the Holy Name Society and St. Mary's Church. He entered the United States Volunteer Service, but did not take on army duties. Dr Norton was not a politician but was active in many civic affairs.

He is survived by his widow a daughter Rita, of Westfield three sisters, Mrs. Nellie Moran and Mrs. John Bush both of Lee, and another in St Joseph's Order of Nuns of Hartford, Conn. his father James Norton, and a brother Dennis Norton of Lee.

Dr E S Smith Chief of Staff of Noble Hospital testified to Dr Norton's character as follows. The death of Dr James J Norton fellow physician and surgeon removes from the Staff of Noble Hospital a member greatly respected and admired. On the Staff for over twenty five years, he had given untiringly of himself both on the Medical and Surgical Services. His skill in both of these departments is a matter of record.

President P N Hall of the Board of Trustees of the hospital expressed the same sentiment.

PEIRSON — EDWARD LAWRENCE PEIRSON M.D., of 13 Barton Square Salem Massachusetts, died at his home January 18 1935 after a long illness. He was educated in the schools of his native city and Harvard College and received his M.D. degree from the Harvard Medical School in 1888. He joined the Massachusetts Medical Society in 1889 and was also a Fellow of the American Medical Association. Dr Peirson had formerly served as Chief of Staff of the Salem Hospital.

He conducted practice from the same house which was occupied by his father and grandfather both of whom were physicians and his son Dr Edward L. Peirson will carry on his practice in the same location.

Dr Peirson was a member of the Masonic and Odd Fellows Fraternities and the local medical society. In addition to the younger Dr Peirson, he is survived by another son, Benjamin S. Peirson of Irving New York a daughter Miss Octavia Peirson of Salem and two sisters, Mrs. Frank Benson of Salem and Mrs. Richardson, the widow of the late Dr Maurice Richardson of Boston.

result was excellent in three, good in two, and fair in one. The other case died of a pulmonary embolus.

Dr William Evans spoke on "Long Standing Cases of Persistent Auricular Fibrillation". Of the thirty-three cases studied with this condition, all had had it for eight years or more and sixty per cent of the patients are still living. The study revealed no apparent connection with age or sex or the related heart disease. The heart condition associated with these cases was about the same as in any unselected group of patients with auricular fibrillation, i.e., fifty-four per cent had rheumatic heart disease, twenty-seven per cent had arteriosclerotic heart disease, fifteen per cent had hypertensive heart disease, three per cent were associated with thyrotoxicosis, and none had luetic heart disease. Dr Evans concluded that no specific type of patient tended to live longer than others.

Dr M C Sosman was the last speaker of the evening and talked on "Calcification of the Valves of the Heart". Within the past three years, he has studied over one hundred cases of this condition fluoroscopically. Where aortic stenosis has been present at autopsy he has found calcification of the aortic valve in ninety per cent of cases. As an end-result of rheumatic carditis, the mitral valve often shows small areas of calcification. In elderly patients the annulus fibrosus of the mitral valve is sometimes calcified, although this apparently has no association with heart disease. By the use of very high speed x-ray machines and special films, Dr Sosman has been able to take pictures of these areas of increased density. Since the aortic valves never become calcified in luetic heart conditions, this method can occasionally be used as a point in differential diagnosis, but in the majority of cases it affords only confirmatory evidence. The method is also of very definite value in studying the physiology of the heart. By watching the calcified valves move while listening to the heart sounds with a stethoscope the relationship between these two events may be established.

#### THE ESSEX NORTH DISTRICT MEDICAL SOCIETY

The ninety fourth Semi-Annual meeting of the Essex North Medical Society was held at Shawsheen Manor, January 16, 1935, at 12:30 P.M., with eighty-six members present.

At the request of the President, Dr Burnham moved that the members pay fifty cents toward their dinner, the rest to be paid by the society. The motion was seconded and unanimously adopted.

The Secretary's report was read and accepted as read.

Dr Parr, the President, appointed the following nominating committee: Drs Sweetser, Burnham, Bakel, Healy, and Stokes.

The oldest member of the Society, Dr Durant, was reported as being very ill. Dr Bagnall moved that

the members send a testimonial of their sympathy. The motion was seconded and unanimously adopted.

Dr Bagnall reported for the Public Relations Committee of the State that the Committee had voted to conduct a survey on the adequacy of medical service in the State. He called attention to the questionnaire which had been sent to all the Fellows, and urged that those who had not already sent it in, do so at their early convenience, but first giving sufficient thought to the subject matter. He suggested that the percentage of free work and uncompensated work might be estimated from the day book, by an appropriate sign to indicate whether they were uncompensated or compensated ultimately on a reduced fee basis. The percentage of the total work of the month which these represented could then be calculated and reported in answering this question. He invited criticisms and suggestions from the Fellows on the work of the District and of the State Public Relations Committees.

The attention of the Fellows was brought to the last issue of the Bulletin of the American Medical Association—notably, to the first article on the New Jersey Medical Society's methods of adjusting itself to prevailing conditions. The idea of having a Public Health Hour for the conduct of such procedures as vaccination, and diphtheria prevention for those people who had been urged to avail themselves of this protection, and were not economically so situated that they should properly receive this service free from school physicians, board of health physicians, and city physicians, was recommended as an approved method of adjusting the Fellows to conditions in Massachusetts.

Dr Tighe of Lowell was then asked to comment on the Public Relations Committee in his district and in the State Society. He urged that the Fellows interest themselves in matters of Public Relations, and get behind their committee in order to improve present and future Medical Public Relations. He said that in his district it was felt that this was the most important committee in the Society.

The secretary then read a communication from The New England Journal of Medicine, urging a more manifest interest in its advertising. The suggestion was made that post cards be freely used in requesting samples in order to demonstrate the value of the advertising in the Journal, and thereby lessen the cost of publication to the Society.

A letter from the President of the Massachusetts Medical Society urging cooperation of the Fellows in the interest of legislation favorable to the profession was read.

A communication from the Greater Lawrence Medical Club was then read, urging the whole Society to join them in getting behind the physicians' and hospital Lien Law. The secretary in moving the adoption of this recommendation reported that similar action had been taken by the Gale Hospital Staff at its last meeting, and that the trustees of the hospital had been likewise urged to appear in favor of

the bill. The motion was seconded and unanimously adopted.

Dr Herbert L. Lombard of the State Department of Health was then introduced by the President. He outlined the history of the development of cancer clinics in Massachusetts. The emphasis so far has been laid rather on public education as tending to get the patient to the doctor at an earlier date. After several years of effort it is still statistically apparent that the patient does not consult a physician until six months after noticing the first symptoms. Another six months elapsed before treatment was initiated, but in the past year this time has been reduced by fifty per cent, and the department has now decided to exert its efforts in the direction of providing consultation facilities in the clinics for the doctor. He reported that the cancer clinic in this district had a rating which was only bettered by three other clinics besides the Pondville Clinic. Dr Lombard said that they are now trying to urge every town in this State to organize a committee. This committee will be composed of one member of each organization from the city or town whose duty is to get a doctor to address them once a year on cancer. Instead of sending out a good deal of material to the public about cancer it will be sent to the physician instead that he may talk to the people.

Dr Douglass V Brown of the Harvard Medical School was then introduced as the principal speaker. By way of introduction, he stated that he had been originally engaged in general economic work and that in that field he had been regarded as a conservative. Since his engagement in medical economics under the auspices of the Harvard Medical School he has been considered by medical men as slightly radical. He indicated his attitude toward Health Insurance in general as one of open mindedness not committed to any specific plan. His attitude toward British Health Insurance, as he had seen it in operation was of approval in principle but not in its entirety. He expressed the idea that some health insurance was inevitable politically if unemployment insurance was enacted but he felt that sometime would elapse before the general adoption of unemployment insurance and that therefore there was time available for the medical profession to get ready for the new deal. British conditions are more nearly parallel to those in this country than are those in any other country and the British system of insurance forms a better basis for study than that of any other nation.

The principles of the British act are briefly as follows. It applies to all manual workers regardless of income and to all non manual workers with an income of \$1550 or less. There are three groups involved in the administration of the act, first, the British Ministry of Health, secondly the approved societies which are the outgrowths of trade unions and friendly societies or of employers associations. They are not allowed to profit by the act and are subject to member control. These two conditions

are fulfilled technically but actually the member control in many societies is no more effective than that of the stockholders of the American Telephone and Telegraph Company. Thirdly there are the Local Insurance Committees which administer the medical side of the act, have physicians as members and were adopted because the British Medical Association refused to deal directly with the societies.

Each employer buys stamps at the Post Office equivalent to nine pence a week per worker. Half of this nine pence is deducted from the week's wages. The money from the sale of these stamps is distributed through the Ministry of Health to the societies. Cash benefits of fifteen shillings a week (\$3.60) commence on the fourth day continue for twenty six weeks and fifty per cent of this amount may then be paid up to the age of sixty five years if disablement continues. Workers join any society they wish if acceptable to the society. They choose freely from a list of physicians who have expressed their willingness to serve under the act, which list is posted at the Post Office. They may change to another physician immediately by mutual agreement of the patient and the two physicians involved otherwise by a two weeks' notice. The society decides when the insured returns to work, with the advice of the physician attending. A wage earner's family is not covered by the insurance and the service is only that which is considered within the scope of general practice.

If surpluses develop the society may then provide additional benefits such as surgical appliances, dental care, hospital costs or eye examinations. By far the larger number show surpluses demonstrating the actuarial soundness. Administration costs are about eleven per cent.

The physician may refuse to accept a patient who chooses his name from the panel. If a patient is not desired by any of the doctors on the panel he is allocated by rotation by authority of the insurance committee. Eighty per cent of the general practitioners are engaged in insurance work. Twenty five hundred persons is the maximum allowed to any physician. In 1932 the average number per physician was 930. The physician received nine shillings less ten per cent per year (about \$2.00 per patient) therefore, the average yield per physician was about \$ 000. The physician had his own private practice besides usually including the members of the family of the wage earner. The secretary of the British Medical Association stated that in his opinion the act had tended to raise rather than to lower the scale of prices outside of the insurance system. He said that he knew of no individual physician who had his income lessened as a result of insurance and that the average had been raised. Extra benefits are paid on maternity cases.

The attitude of the British Medical Association was at first absolutely opposed. Threats by Lloyd George induced grudging cooperation now the British Medical Society wishes the system extended to

the families of the insured and to include also services of a specialist, and its influence is such that no important change could be adopted without its approval. Even if insurance medicine is poor theoretically by the best standards, it is better than the service given before the enactment.

Drugs are handled separately. Physicians do no dispensing except in emergencies. Some conflicts have arisen regarding too much prescribing and the British Medical Association is endeavoring to reduce abuses. Regarding secrecy in relation to diagnosis, the physician, if he does not wish to record the diagnosis, may report it confidentially to the Regional Medical Officer. A Regional Medical Officer is a high type of civil service man who settles disputes.

There is relatively little complaint of "red tape" in contrast to the bad situation in Germany. When the insured becomes unemployed, he is automatically carried on and does not have to pay any arrears. The physician may use his discretion as to response to unnecessary night calls, or other unreasonable demands. Decision in the matter of complaints is handled by the local medical committee largely controlled by the physicians, subject of course to review by the Minister of Health. Physicians have been charged with referring too many patients to hospital out-patient departments. About ninety per cent of all hospital cases in Britain were free until recently. Voluntary hospital schemes are beginning to appear. The great majority of the hospital beds in Britain are government owned. The state provides specialists for consultation in tuberculosis, venereal diseases, and certain other diseases.

**Problems**—The certification by the physician that the insured is eligible to cash benefits is abused by some physicians who are unwilling to incur the displeasure of the patient, lest he change his panel doctor. Dr. Brown expressed his opinion that cash benefits were desirable in order to allow the family to carry on. He also expressed his opinion that as a matter of practical politics, if insurance legislation is adopted, cash benefits must go along with it, because if an insured person were offered the choice of the \$5.00 hard cash or \$10.00 worth of medical service he would choose the hard cash. Subconscious malingering occurs in about the same degree as is evident in the operation of our Workmen's Compensation Act. There is an increase in the amount of recorded illness probably due in part to the introduction of available medical care for those who previously were unable to have it, in part also to the abuse by the insured workman of his privileges. The great number of approved societies probably increase the cost of operation, and it would be hoped that this evil would be done away with if and when legislation is adopted here.

The political lobby of the societies tended to be used against the interest of organized medicine. France uses payment by unit of service, and it is reported that there is so much trouble with its operation that the medical associations are leaning toward a change to "capitation". This method (pay-

ment per insured worker per annum) is antagonistic to American ideas, but it is approved by the British Medical Association as the method of choice.

If insurance is enacted in this country one of the questions would be from whom contributions are to be taken—from the employer, the employee, or both. In Dr. Brown's opinion it would come out of wages anyway, except for the part that would be covered by taxation. Dr. Brown stressed the difficulties in the German situation in contrast to the British in the manner of lay control without adequate consideration of the profession, and the disputes settled by the societies in contrast to the settlement in England by the committee whose membership is largely controlled by the local medical societies. Dr. Brown expressed it as his opinion that the civil service in this country would not produce regional medical officers of as high a type as the British, and he stressed the fact that the British have a greater flair for this type of social experiment than we in this country. He reminded us again that the insurance did not affect the indigent, the hospitals, private practice, or Workmen's Compensation cases.

Dr. Brown impressed his hearers by his evidence of adequate first hand information, with open mindedness, and in his discussion, he bore out his introductory statements to the effect that he did not represent any foundation, nor was he committed to any particular plan of action.

E S BAGNALL, M D, Secretary

#### WILLIAM HARVEY SOCIETY

A meeting of the William Harvey Society was held on January 11, 1935, in the auditorium of the Beth Israel Hospital. Dr. Charles F. McKhann of the Boston Children's Hospital spoke on "Immune Substances in Placental Extract."

After a brief introduction by Dr. Place, Dr. McKhann began his lecture by discussing the immunities and susceptibilities of new-born infants to certain diseases. Practically all infants are immune to scarlet fever for eight months after birth, to diphtheria for six months, measles five months, anterior poliomyelitis six months, rubella six months, chicken pox two months, and mumps two months. The immunity to chicken pox is not so well established as to other conditions mentioned above, and the young infant may develop measles if the mother has never had the disease. The infant is hypersusceptible to pertussis and colon bacillus infection as well as to pyogenic infections of all kinds.

There are three possible sources for this early immunity: first, the placental transmission which may be active, if it transmits the antigen, or passive, if it transmits antibodies generated by the mother's body; secondly, mammary transmission through either the colostrum or the milk or both; and thirdly, tissue immunity in embryonic and rapidly growing tissue. The antigenic transmission through the placenta is very hard to demonstrate,

but it is certain that antibodies definitely go through the placenta. The importance of colostrum was well demonstrated by Theobald Smith who found that this substance contained not only antibodies but also a protein fraction to which antibodies could be attached. The part played by tissue immunity has not yet been fully established.

Through studies on cord blood various investigators have found antibodies for diphtheria, scarlet fever, poliomyelitis and measles to be present. Whereas convalescent serum only gives immunity for weeks, cord blood established a more lasting immunity which generally continues for months. This suggests that there must be storage of the antibodies elsewhere than in the blood plasma. The group at the Children's Hospital has investigated the question of placental storage of antibodies and has found suggestive results.

The method of preparation of the placental extract is to pool a number of placentae (because of the great individual variation) and cut them up finely then these are extracted with from two to four per cent sodium chloride solution. The use of a hyper tonic solution is necessary because of the hemolysis which takes place rapidly in fetal blood. This extract contains fetal blood, placental tissue and a very small amount of maternal blood since the euglobulin content is very small (fetal blood contains practically none of this substance). The globulin is then precipitated with ammonium sulfate and put in a collodion package for dialysis and finally the extract is put through a Berkafeld filter. By further purifying methods it is found that practically all of the diphtheria antibodies are found in the pseudoglobulin fraction while the much smaller euglobulin fraction contains essentially none.

The extract will blanch the rash of scarlet fever but this power is lost if the extract is not fresh although this is not true as regards the diphtheritic antitoxic properties. It has been found that the anti-diphtheritic and antiscarlet fever properties are almost entirely due to the pseudoglobulin fraction while the antibodies of the virus diseases in particular measles and anterior poliomyelitis, are apparently equally distributed among the fractions, indicating that the antiviral substances are probably more closely attached to the tissues. The crude extract will neutralize the virus of poliomyelitis.

Because of the difficulty of controlling cross infections with measles in hospital wards, much work has been done in the Children's Hospital to establish a reliable means of protecting sick children against this complicating factor. In the past, immune convalescent serum has been used to some extent and it has been found that about three times the dose of serum is needed if the normal adult blood is used as when the blood of a child who has recently recovered from measles is employed. If these serums are used within four days after the exposure to the disease the child will not come down with it. Such immunity lasts only from four to six weeks. The dose, the potency the time of in-

jection the age and size of the patient, and the degree of exposure are all important factors influencing the effectiveness of serum in the control of measles.

In general it may be said that all forms of serum used to protect against measles if used in adequate amount, completely protect up to the fifth day after exposure modify from the fifth to the ninth diminish from the ninth to the thirteenth and have no effect after this date which is about the time of the appearance of the eruption. According to this massive doses may diminish the effects even up through the period of prodromal symptoms. The modified form of measles has a longer incubation and is milder. By the use of placental extracts in the hospital secondary cases are minimized and it is also possible to prevent debilitated and tuberculous children from having the disease provided that the time of exposure is known. Modification is desirable in the general community if by this means a permanent immunity is established, a point not yet fully determined.

Dr McKhann then showed several slides demonstrating the effects of various fractions of the extract of placental tissue in modifying and preventing measles. The crude unfiltered extract was given to 118 children without any failures but any attempt to purify this material either by filtering or by fractionating definitely diminishes its strength. Each of the fractions has a potency that is roughly in proportion to the nitrogen content, and the use of these substances has resulted in from five to ten per cent failures. The commercial product put out by Squibb gave three and two-tenths per cent failures in this series. The immunity which is procured in this way lasts only some three weeks.

There have been no cases of infection resulting from the use of the serum but about one case in four had a local reaction, one in eight a febrile reaction and only two per cent ran a fever of over one hundred and one degrees. Surprisingly enough the more refined products give the more severe reactions. Standardization of the extract is necessary and the following are some of the important considerations the method of preparation, the yield per placenta, the separation of the diphtheria and measles potency, the study of the partial parallelism between potency and nitrogen content and the effect of aging.

#### HARVARD MEDICAL SOCIETY

A meeting of the Harvard Medical Society was held on the evening of January 11 at the Peter Bent Brigham Hospital. Dr Fitz opened the meeting by taking the audience back to an evening forty-one years ago when the Boston Medical Society was holding one of its meetings. At that time a Mr Joslin of the third year class of the Harvard Medical School had presented a paper on the "Pathology of Diabetes Mellitus" and part of this paper was reproduced over the phonograph.

Dr Elliott P Joslin presented a most amusing, interesting, and instructive talk on "Forty Years of Diabetes". He began by recalling that between 1824 and 1898, twenty seven per cent of all cases entering the hospital with diabetes died, and from 1898 to 1914 this was increased to twenty eight per cent. The tasting of urine by the house officers or even by the patient to see if it was sweet was an established practice until well past 1850 when the various chemical tests came into use. Dr Peterson was the first to conceive of the idea of putting several test tubes in a container and boiling them all at once, and Dr Joslin pointed out the importance of this time-saving device and presented its inventor to the audience.

Dr Joslin presented one of his twenty-nine cases of renal glycosuria, one of his four cases of pentosuria, and one of his two known cases of levulosuria. Twenty out of every one hundred patients showing sugar in the urine on routine examination do not have true diabetes mellitus, although two or less of these twenty will later come down with this disease.

Between the years 1898 and 1914, sixty per cent of all diabetics died in coma, from 1914 to 1922 this fell to forty per cent, in the ten years after the discovery of insulin in 1922 this percentage fell to twenty per cent, and in the last few years only four and eight tenths per cent of diabetic patients have died in coma. In the early years of the present century Dr Joslin began to notice the harmful effect of giving soda to coma patients, a practice that had been prevalent up to that time. The use of salt now so universally administered to coma patients was also worked out at about the same time. A young girl was shown who had been improving in the hospital after treatment for coma, when she began to vomit, developed a non protein nitrogen of 126 milligrams per cent, and began to have convulsions. Her blood sugar remained normal, but she was anuric for a total of thirty-five hours. Upon the injection of fifty cubic centimeters of a ten per cent sodium chloride solution, she rapidly regained her normal condition. Since 1917 Dr Joslin has never given any soda to his coma patients.

The prognosis for children brought into the hospital in diabetic coma is excellent, there having been only one death out of one hundred and nineteen such cases in Dr Joslin's clinic. However, the mortality of adult coma cases is much higher, being around twenty two per cent. There is always some cause for a previously regulated diabetic going into coma, the most frequent etiological factors being infection, too little insulin and a broken diet. After the diagnosis of coma has been made, the patient should be treated by washing out the stomach, giving insulin, injecting normal salt solution beneath the skin or into the vein, and keeping the patient warm. There is no need of giving any glucose.

In a brief discussion of the etiology of diabetes, Dr Joslin stressed the importance of heredity and stated that in fifty three per cent of the children who

have had the disease over ten years, this factor has been established. This point was cleverly driven home by the separate presentation of identical twins, one of whom developed the disease in 1931 and the other in 1933. Among the forty one pairs of twins that have come to the clinic, both twins have diabetes in seventy two per cent of the identical type, while only seventeen per cent of the dissimilar twins show the condition in both members.

In order to show what diet can accomplish, one case who developed diabetes in 1905 and another in 1909 were demonstrated and both were healthy. At present there are 400,000 diabetics in the country. Complications are more numerous now and are more important because of the fact that diabetics live so much longer than used to be the case. There have been many different theories as to the most effective diet, but at present from 100 to 200 grams of carbohydrate are given daily. Dr Joslin presented the patient who was the first case of his to receive insulin. At that time she got only seven grams of carbohydrate a day and had dropped from 150 to 70 pounds.

In severe cases exercise will push up the blood sugar, but insulin combined with the proper amount of exercise will lower the blood sugar much more rapidly than insulin alone. Another patient was presented who says that he keeps himself sugar free by dancing a jig for twenty minutes each day, and he uses no insulin.

Tuberculosis is thirteen times as common in diabetic children as in other children and one per cent of all cases in tuberculosis sanatoria are diabetics. While the death rate of tuberculosis is dropping, that of diabetes is rising and if the rates of increase and decrease in these two conditions continue in the future as they have in the past, there will be more deaths from diabetes in 1939 than there will be from tuberculosis.

Pregnancy was formerly almost always a fatal complication in diabetic patients, but this is no longer true. From a point of view of prevention, heredity must be considered and two diabetics should never marry, nor should a diabetic ever marry into a family with a history of this condition. The cost of the care of the diabetic is tremendous and hospitals should be used chiefly for the education of the patient and for emergency work such as coma, complications, and insulin shock. It is hoped that in the future more use will be made of camps for the training of these patients in the proper care of themselves, since this is a much cheaper method than bringing them into the hospital for a more or less prolonged stay. These patients can escape complications only by careful treatment.

#### FAULKNER HOSPITAL CLINICAL MEETING

The next meeting will be held at the Faulkner Hospital on Thursday afternoon, February 7, at 3:00 PM. In addition to the usual clinical pathological

conference on the cases which have come to autopsy during the month Dr D J Bristol will give a short talk on Common Obstetrical Practices at the Faulkner Hospital.

All physicians are invited

### WILLIAM HARVEY SOCIETY

The next meeting of the William Harvey Society will be held Friday February 8 in the Auditorium of the Beth Israel Hospital, Boston at 8:00 P.M.

#### PROGRAM

**Speaker** Dr Arthur M Fishberg New York City  
**Subject** "Peripheral Vascular Collapse"

**Chairman** Dr Hyman Morrison Professor of Clinical Medicine, Tufts College Medical School.

Dr Fishberg Columbia University Medical College 1931 Associate in Medicine Mount Sinai Hospital and Associate Visiting Physician Beth Israel Hospital, New York.

### HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) this day evening February 12 at 8:15 P.M.

#### PROGRAM

##### Presentation of Cases

The Significance of Changes in Plasma Volume as Determined by the Dye Method by Dr Magnus I Gregerson.

The Toxicity of Two Dyes Used in Plasma Volume Determinations by Dr John G Gibson II

MARSHALL N FULTON MD Secretary

### BRITISH CONFERENCE

The twenty first annual conference of the British National Association for the Prevention of Tuberculosis will be held at Southport, England on June 27 to 29 inclusive. The subject for discussion will be "The Responsibility of the Nation Towards the Child in Respect of Tuberculosis." Persons desiring further information should write to Miss F Stickland, secretary of the Association at Tavistock House North, Tavistock Square London W C 1, England.

### SVENTH INTERNATIONAL CONGRESS ON INDUSTRIAL ACCIDENTS AND DISEASES

The Seventh International Congress on Industrial Accidents and Diseases will be held at Brussels, Belgium from July 22 to 27 1935. The American Committee of the Congress is under the chairmanship of Dr Fred H Albee New York for the Section on Accidents and that of Dr Emeric R Hayhurst Columbus Ohio, for Industrial Diseases.

The American delegation to the Congress will sail from New York on August 4 and visit London Amsterdam The Hague and Paris and, optionally Budapest. Physicians interested in the Congress or in the medical tour in conjunction with it may address the Secretary Dr Richard Kovacs 1100 Park Avenue New York City.

### WORCESTER DISTRICT MEDICAL SOCIETY

The next meeting of the Worcester District Medical Society will be held on Wednesday evening February 13 at the Worcester State Hospital. Dinner will be served at 6:30 and the business session and scientific program will begin at 7:30.

#### PROGRAM

The Endocrinology of To-day (Illustrated) By Dr R. G. Hoskins Dr Hoskins is Editor of the *Journal of Endocrinology* Director of the Neuro-Endocrine Foundation and Director of Research at the Worcester State Hospital. He also holds the position of Research Assistant at the Harvard Medical School

ERWIN C. MILLER, MD Secretary

### SOCIETY MEETINGS CONGRESSES AND CONFERENCES

#### CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY FEBRUARY 4 1935

##### Monday, February 4—

February 4 3 P.M. Institute for Tuberculosis Workers Hotel See page 49  
11 P.M. Clinic—Medical Surgical and Orthopedic Services Children's Hospital and Infant Hospital (Amphitheatre)

##### Tuesday, February 5—

1:45 P.M. Radio Program WEEI The Trends in Sewage Disposal  
1:45 P.M. Ward Visit Massachusetts Eye and Ear Infirmary  
4:45 P.M. Seminar Pediatric Laboratory Massachu-setts General Hospital  
4:45 P.M. Radio Program WBZ Appendicitis

##### Thursday, February 7—

13 M. Clinic Pathological Conference. Massachusetts General Hospital  
11 M. Clinicopathological Conference. Children's Hospital  
3:45 P.M. Medical Clinic. Dr Christian. Peter Bent Brigham Hospital  
4:45 P.M. Surgical Clinic. Peter Bent Brigham Hospital  
3 P.M. Faulkner Hospital Clinical Meeting

##### Friday, February 8—

6:15 P.M. Radio Program WEEI "Rheumatic Fever and Pneumonia."  
8 A.M. William Harvey Society Beth Israel Hospital

##### Saturday, February 9—

10 A.M. Medical Staff Rounds. Dr Christian. Peter Bent Brigham Hospital

##### Sunday, February 10—

8 A.M. Harvard University (Medical School, Building D Longwood Avenue Boston.) Free lecture Minerals In Our Bodies and Our Foods Dr IL C Trimble

Open to the medical profession

Open to Fellows of the Massachusetts Medical Society

February 1—Boston City Hospital Surgical Clinic will be held 1 P.M. in the Cleaver Amphitheatre

February 4—Institute for Tuberculosis Workers See page 49

February 7—Clinic at the Peter Bent Brigham Hospital. See page 49

February 7—Faulkner Hospital Clinical Meeting See page 55

February 8—William Harvey Society See notice elsewhere on this page

February 12—Harvard Medical Society See notice elsewhere on this page

### MASSACHUSETTS DIETETIC ASSOCIATION

February 12—Tuesday 8 P.M. "Diabetic Children" Dr Priscilla White, Joslin Diabetic Unit.

March 12—Tuesday 8 P.M. "The Effect of Diet on Anemia" Dr Louis Diamond, Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital

March 19—Tuesday 8 P.M. Field Trip Visit Storehouse, First National Stores.

April 6—Tuesday 8 P.M. "Small Hospital Problems" Mrs Margaret Copeland Superintendent, Free Hospital for Women.

February 13—New England Dermatological Society will meet at the Massachusetts General Hospital at 3 P.M.  
 February 20—Brookfield Medical Club will meet at the Hampshire House Ware, Mass

Hampshire House Ware, Mass  
 March-May—International Medical Postgraduate Courses in Berlin See page 220

March 11, 12, 13—Surgeons to meet in Jacksonville, Florida (Southeastern Surgical Congress) See page 83, issue of January 10

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr. E. R. Loveland, Executive Secretary, 133-135 South 36th Street Philadelphia, Pa

June, 1935—Medical Library Association will meet in Rochester, N.Y. For details address the Secretary Miss Frances N. A. Whitman, Librarian Harvard University Schools of Medicine and Public Health, Boston, Mass

June 27-29 Inc.—British National Association for the Prevention of Tuberculosis See page 227

July 22-27—Seventh International Congress on Industrial Accidents and Diseases See page 227

#### DISTRICT MEDICAL SOCIETIES

##### ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Annual Meeting will be held in May Time, place and subject to be announced

E. S. BAGNALL, M.D., Secretary

##### FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel, Greenfield, Mass

CHARLES MOLINE, M.D., Secretary

Sunderland

##### MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

March 13, 1935—Wakefield

May 8, 1935—Winchester

K. L. MACLACHLAN, M.D., Secretary

1 Bellevue Street, Melrose

##### NORFOLK DISTRICT MEDICAL SOCIETY

February 26, 1935—Hotel Kenmore, 8 P.M. The Use of Amniotic Fluid in Abdominal Surgery Dr. Herbert L. Johnson

March 26, 1935—Fernald School for Feeble-Minded, Waverley Details to be announced

May, 1935—Annual Meeting Date, time and place to be announced

##### PLYMOUTH DISTRICT MEDICAL SOCIETY

March—Plymouth County Hospital

April—Lakeville Sanatorium

##### SUFFOLK DISTRICT MEDICAL SOCIETY

March 27, 1935—Clinical Meeting at the Boston Lying-In Hospital

April 24, 1935—Clinical Meeting at the Children's Hospital

The medical profession is cordially invited to attend all of these meetings

ROBERT L. DeNORMANDIE, M.D., President

GEORGE P. REYNOLDS, M.D., Secretary

##### WORCESTER DISTRICT MEDICAL SOCIETY

February 13, 1935—See page 227

March 13, 1935—Wednesday evening The Memorial Hospital Worcester Mass 6:30 P.M. Buffet supper 7:30 P.M. Scientific program and business session Announcement of subjects and speakers to be presented at a later date Buffet supper complimentary by the Hospital.

April 10, 1935—Wednesday evening Worcester Hahnemann Hospital Worcester, Mass 6:30 P.M. Dinner 7:30 P.M. Scientific program and business session Announcement of subjects and speakers to be presented at a later date Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening Annual Meeting of the Worcester District Medical Society The time and place of this meeting will be announced later

ERWIN C. MILLER, M.D., Secretary

27 Elm Street, Worcester

#### BOOK REVIEW

Wish Hunting in the Unconscious An Analysis of Psychoanalysis By Milton Harrington 189 pp New York The Macmillan Company \$2.50

Here is a book that those who are critical and incredulous of the Freudian philosophy will welcome, and read with profit and satisfaction

Briefly, the theories of psychoanalysis are based on so-called facts developed from the technique of psychoanalysis which, in turn, is based on so-called evidence derived from free association and dreams. This evidence admittedly is often falsified, or made up by the patient, and is untrustworthy. But the untrustworthiness of this evidence is not allowed to invalidate the theories based thereon. No non-convert to psychoanalysis is held to be competent to criticize the theories. Only if you believe it, have you a right to state your disbelief in it!

The author writes "Psychoanalysis has given us a new technique, but it is one by which each individual worker can find practically anything that suits him. It is, therefore, without scientific value. One of the charms of psychoanalysis lies in the fact that by means of it one can explain practically everything. Psychoanalysis is, therefore, among other things a great face-saving device. It saves all those who embrace it from the humiliation and embarrassment of having to admit ignorance. Psychoanalysis gives us no mental hygiene, no treatment for the psychoses. All it gives us is a new treatment for the neuroses, which is apparently just a new form of suggestion therapy and this new treatment, although it is extremely expensive and time-consuming, has not been shown to be any more effective than other forms of suggestion therapy which have preceded it. It will not seem strange that so little technical knowledge is necessary for the successful practice of psychoanalysis, if we bear in mind that psychoanalytic treatment is a form of suggestion therapy and that, therefore, it really makes little difference what explanation the analyst offers of his patient's symptoms provided only that he is able to induce his patient to accept his explanation as the right one."

As an alternative to psychoanalysis the author writes—"A kind of psychology which would explain abnormal behavior as due to faulty action of the mechanism by which all behavior, both normal and abnormal is produced, we may call Mechanistic Psychology, while that of the psychoanalyst in which the symptoms of mental and nervous disease are explained by attributing them to desires or motives we may call Motivistic Psychology."

And near the end of the book appears this excellent summing of the therapeutic field in psychiatry "The treatment of any ill is a matter of dealing with the causes which produce it, and since according to our mechanistic theory, our mental ills are due to bad heredity, faulty education, somatic disease, and difficult or trying situations, the preservation of mental health is a matter of dealing with these four factors. It is a matter (1) of breeding a race of potentially healthy and efficient people, (2) of giving these people the kind of education or training which will make the most of their potentialities, (3) of preserving their bodily health, and (4) of giving them the kind of environment which is best suited to their requirements."

# The New England Journal of Medicine

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NUMBER 6

## NEW ENGLAND SURGICAL SOCIETY

### TIDAL DRAINAGE OF THE URINARY BLADDER\*

A Preliminary Report of This Method of Treatment As Applied  
To "Cord Bladders" With a Description of the Apparatus

BY DONALD MUNRO, M.D. † AND JOSEPH HAHN, M.D. ‡

**A**BNORMAL motility of the urinary bladder presents certain special problems in therapy, the solution of which has been notoriously unsatisfactory. This has been particularly true in those cases in which the innervation of the viscera has been altered. This causes on the one hand paralysis or weakness and on the other overactivity and hypertrophy of the detrusor muscle, and the internal and external sphincters. Ideal treatment under such circumstances calls for a minimum of catheterization provision for control of intravesical pressure and therefore the degree of distention of the bladder, and a method whereby irrigation together with the complete removal of residual urine can be carried out. This paper comprises a description of an apparatus that in our hands has fulfilled these requirements. A brief preliminary report of its use as a therapeutic agent in the treatment of certain cases of so-called cord or neurogenic bladders is also included.

Tidal drainage has been previously described in relation to both the treatment of pleural empyema and that of urinary bladder disease. Its characteristic is or should be an automatic alternate ebb and flow of the fluid content of a closed cavity. For this reason we do not class the treatment described by Hart<sup>1</sup> as true tidal drainage. Automaticity is replaced in his original apparatus by a pumping action obtained by the motion of the chest wall and in the later models by a suction pump. The only apparatus which has provided tidal drainage in bladder disease is that developed by Laver sometime previous to 1929 and refined in 1934.<sup>2</sup> We have been unable to find his original description except as given in the Down Brothers Instrument Catalogue of 1929.<sup>3</sup> By using one of his earlier apparatuses as a model and also in actual practice we developed a similar but less expensive machine which was described by one

of us also in 1934.<sup>4</sup> We believed that all three of these were efficient until more accurate observations made necessary in an attempt to attach a manometer demonstrated that a part only of the bladder contents was removed at each "ebb." Although this imperfect apparatus was a great improvement on any of the commoner methods now in use, the problem of residual urine was still unsolved. Other types of apparatus such as described by Young<sup>5</sup> and Davis<sup>6</sup>, do not produce tidal drainage as described above. Their action is limited to the decompression of a distended bladder either with or without additional irrigation.

Our present apparatus to be described in detail below, alternately fills the bladder to a predetermined height of intravesical pressure and then empties it by a combination of siphonage and gravity flow, the siphon being interrupted coincident with complete evacuation. This process is dependent upon three fundamental factors. These are first, the introduction into the system of a small reservoir equipped with an air vent which receives the irrigating fluid as it drips from the container. Secondly, an arrangement whereby the siphon comes off between the reservoir and the bladder, and thirdly, providing the tubing through which the bladder empties with a diameter at all points at least twice that of the tubing through which the reservoir empties. (Figure 1.)

The different parts are as follows. A 1000 cc. container graduated in 25 cc. amounts which empties through the bottom is attached by a 30 cm piece of rubber tubing to a dropper which must be without an air vent. The rate of flow through the dropper is controlled by an adjustable pressure clamp placed above it. The lower end of the dropper is attached by an appropriate length of rubber tubing to the upper end of the vertical limb of a glass T tube set on end and having an internal diameter of 4 mm., the other end of which leads to the reservoir. The reservoir is a 1/2 pint preserve jar with a lock bar top. This can be bought at any Woolworth 5 and 10 cent store. A No 9 rubber cork with two perforations closes and is held solidly

\* From the Neurosurgical Service, Boston City Hospital, Boston, Massachusetts.

Read at the Annual Meeting of the New England Surgical Society at Burlington, Vermont, September 28, 1934.

† Munro, Donald—Visiting Surgeon in charge of Neurosurgery, Boston City Hospital. Hahn, Joseph—Resident in Neurosurgery, Boston City Hospital. For record and addresses of both see "This Week's Issue," page 371.

in the bottle with the lock-bar. Through the perforations are inserted two pieces of glass tubing with an inside diameter of 3 mm. Of these one reaches to the bottom of the jar and is attached to the lower end of the vertical limb of the T tube in the container system. In addition the tip of this piece of tubing which is inside of the reservoir is fused to a diameter of 2 mm or less. Through the other perforation a similar piece of tubing is inserted. This reaches only to the bottom of the cork and

end of the horizontal limb of a similar T tube placed upside down. From the other end a connection is made to the catheter in the bladder. A rubber tube leads from the vertical arm of this last T tube upwards for a predetermined distance and then downward to a waste bottle.

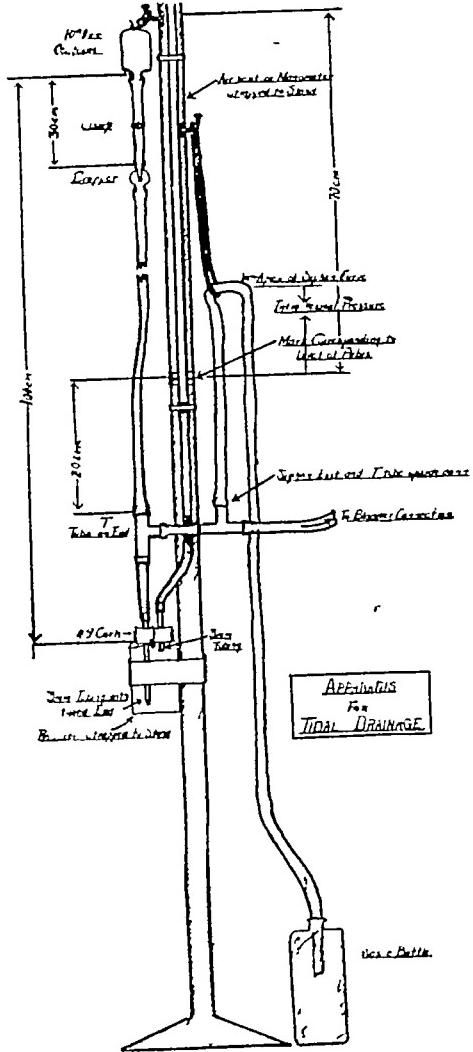


FIGURE 1 Diagram of tidal drainage apparatus.

neither end is decreased in size. The upper end is attached through a stiff-walled rubber tube 18 cm long to a straight glass tube 70 cm long. If the apparatus is to be used only for tidal drainage, this latter should have a diameter of 7 mm. If however it is desired to measure bladder pressures, the bore should be 3 mm and a centimeter scale should be placed in back of it when the apparatus is set up. In either event the primary purpose is to provide an air-vent for the reservoir. The horizontal limb of the T tube on the container set-up is attached to one



Photograph of tidal drainage apparatus in use

The apparatus is set up as follows (Photo No 1). A hat stand or irrigator stand is marked in some suitable way at a point level with the pubis when the patient is flat on his back in bed. This is a sufficiently accurate and accepted point from which to measure vesical pressure. The reservoir with the container and siphon sections attached to it is then fastened by adhesive plaster to the stand at a point which will bring the joined horizontal limbs of the two T tubes 20 cm below this mark. This permits of a margin of safety for excessive respiratory excursions of the fluid in the system. These might otherwise activate the siphon before the desired intravesical pressure had actually been attained. The container with its attachments is hung from the stand at least 100 cm above the reservoir. The air vent or manometer, as the case may be, is now attached by its rubber tubing to the reservoir and then the glass strapped to the stand with adhesive plaster. The lower end of

this glass tubing should be at or just below the mark indicating the level of the pubis. The siphon rubber tube is now led upward to a predetermined number of centimeters above the level of the pubis and then curved downward without kinking to end in the waste bottle. The height in centimeters of this curve above the level of the pubis will be the level of the intravesical pressure at which the bladder will be emptied. The tube may be curved without kinking by splitting lengthwise a two inch piece of the same type tubing and using it to reinforce the curve on its lower side, the whole being supported by a bandage tied to an appropriate hook on the stand. The catheter connection is made and the flow started through the dropper. Providing all joints are air tight the apparatus will now work.

In a typical cycle the reservoir is first filled to the level of the horizontal arms of the T tubes after which the fluid flows into the bladder. During the filling the air escapes through the air vent. As the bladder fills the intravesical pressure rises even if there is complete atonia. Coincident with that rise the fluid in the container system below the dropper, in the air vent and in the part of the siphon leading upwards, rises simultaneously and equally. This rise continues until the top of the curve of the siphon tube is reached (and corresponding levels in the air vent and the container system). At this point the intravesical pressure is equal to the distance in centimeters between the level of the pubis and the apex of the siphon curve. The addition of more fluid overflows the siphon which because of its position empties the reservoir and bladder simultaneously. The bladder empties via the catheter and bladder end of the siphon T tube, the reservoir via the glass tubing through which it had been filled, the T tube of the container system and the container end of the siphon T tube. However, because the size of its discharge tube is  $\frac{1}{2}$  the size or less of that of the bladder, the reservoir empties only  $\frac{1}{2}$  as rapidly. Fluid remains in the air vent until both are empty thus sealing it and permitting the siphon to continue. With the emptying of the reservoir, usually well after the bladder, the air vent empties also and air then enters through this latter rushes up into the siphon and interrupts the flow. The stage is now set for a repetition. Should the bladder be so large as not to empty as described the residual urine will not remain in the bladder. It will drain by gravity into the reservoir, the cycle will be hastened and such excess urine will be removed. The apparatus is working perfectly when respiratory excursions are visible in the air vent, there is no leak around the catheter, the air enters only by the route described above and the jar empties completely at each cycle. The catheter should be removed, cleaned and

replaced once a week. This apparatus is cheap and simple to construct. When set up it acts automatically for an indefinite period with a minimum of attention. Furthermore, observations at present being carried out, but not as yet completed, indicate that manometric studies of intravesical pressures and, by inference, detrusor muscle activity can be made with sufficient accuracy with this apparatus to indicate in some detail what progress the bladder is making toward eventual recovery. These measurements also provide a more accurate diagnostic estimation of the cause of the abnormal bladder activity and furnish a true estimate of the amount of residual urine.

Bladders suitable for treatment by tidal drainage are predominantly those associated with spinal cord injuries. Other methods of treatment such as those commonly in use to-day are recognized as unsatisfactory. For example repeated urethral drainage or an inlying catheter lead to urinary tract infection with possibly considerable damage to the bladder wall from overdistention. Attempts to produce so-called automaticity by allowing the bladder to empty itself either with or without the aid of external pressure certainly damage the bladder wall and probably lead to infection. In either case such infection retards the return of segmental reflex activity and usually leads to death. Suprapubic drainage like watchful waiting, condemns the patient to a greater liability to decubitus ulcerations on account of the leakage and resultant constant wetting of the bed. Shrinkage of the bladder is also prone to follow. Even tidal drainage carries possibilities of harm in its wake if it is misused. Such therapy results directly from ignorance of the physiology of micturition and the changes that take place following a spinal cord injury.

For a complete review of the knowledge available to date in regard to these problems, the works of Holmes<sup>13</sup>, Learmonth<sup>14</sup>, Fulton<sup>15</sup>, Denney Brown and Graeme Robertson<sup>11, 12</sup> should be consulted (Figure 2). Suffice it to say here that normal micturition is a reflex act stimulated by distention of the bladder wall associated with alternating periods of stretch and relaxation. This results in contraction of the detrusor muscle with reciprocal relaxation of the internal and external sphincters. These activities are mediated by the parasympathetic and pudic nerves. Emptying may be inhibited by impulses from higher centres which short circuit the motor side of the reflex arc or by impulses from the same source which prevent the relaxation of the external sphincter. Additional inhibitory impulses through the sympathetic nerve supply are possible but probably of no practical significance. The sensation of pain on the other hand undoubtedly is carried over this latter connection. Facilitation of emptying is produced by failure to inhibit

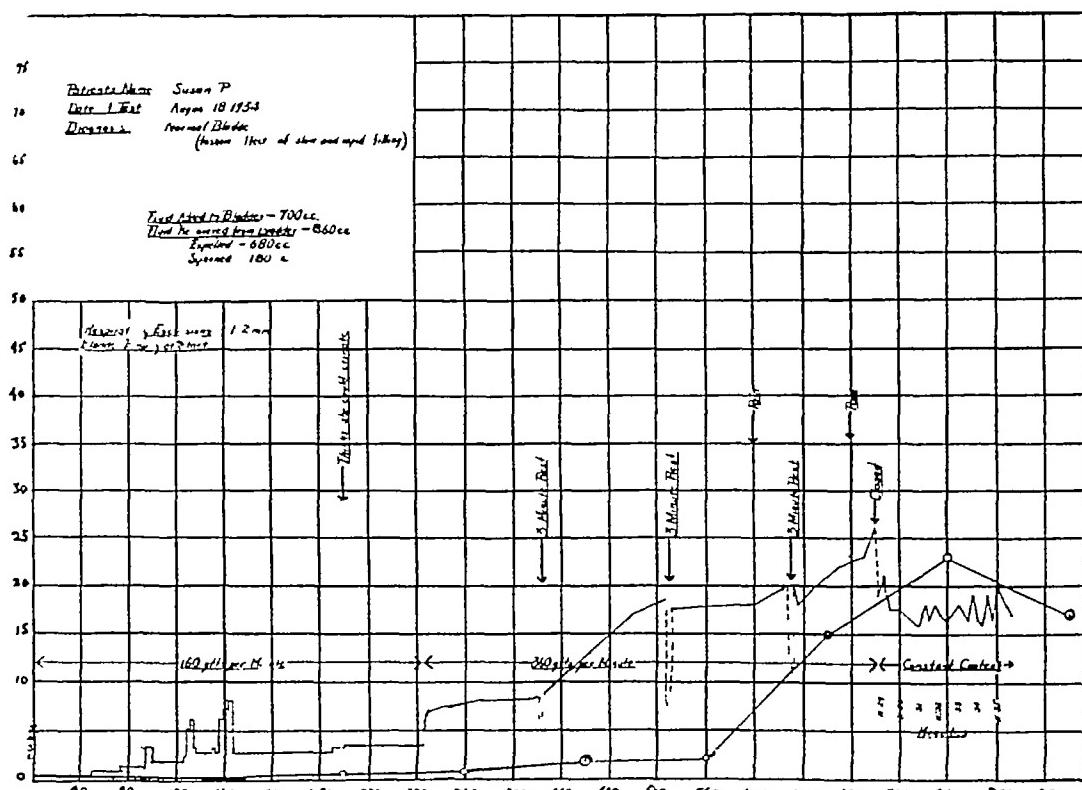


FIGURE 2 Graph of activity of normal bladder as affected by a variation in the rate of filling Abscissa shows cc. of fill and ordinate cm of pressure

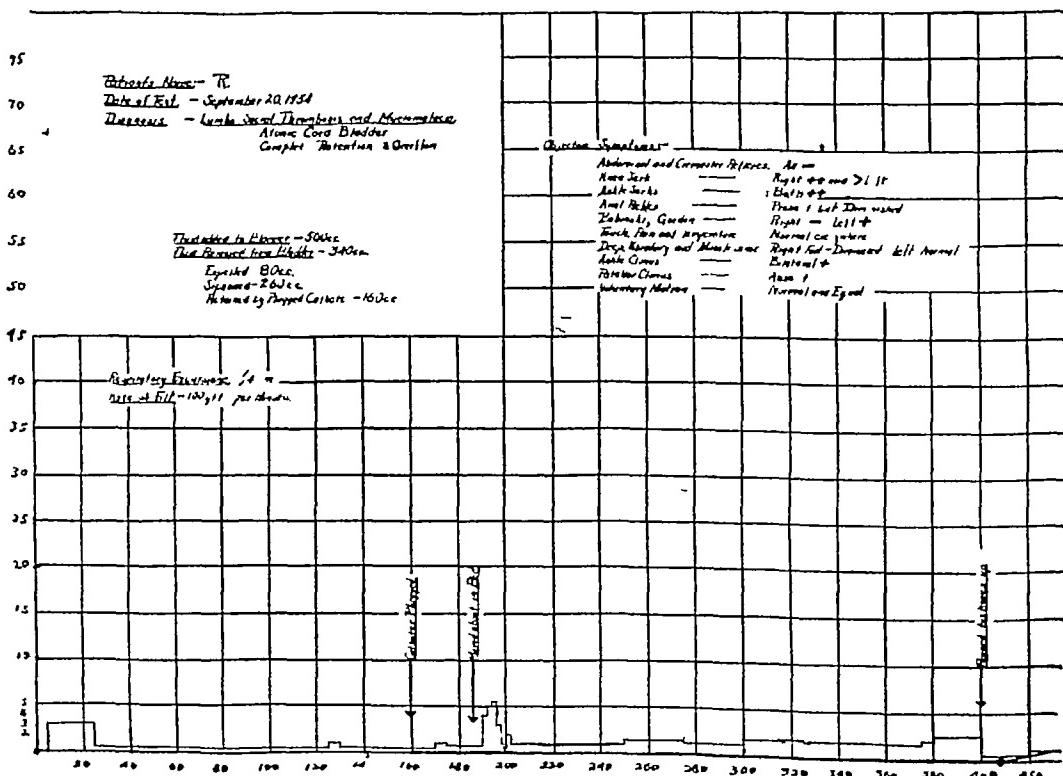


FIGURE 3 Graph of activity of Atonic Cord Bladder  
Complete retention with overdistention from overdistention Abscissa shows cc. of fill and ordinate cm of pressure

Alterations in bladder physiology following spinal cord damage not only remove the organ from the inhibitory influence exerted by higher centres but materially alter the reflex itself. Unless this is understood, treatment cannot be intelligently applied no matter what type is used. Cord bladders are neither "paralyzed" nor "automatic". Their degree of activity is a direct function of the degree of interference with the reflex response to a given intravesical stimulus. Thus is measurable in terms of con-

covery at an unduly late date ensues. Tidal drainage not only prevents this distention but provides regular irrigation and alternate stretch and relaxation of the bladder wall under a controlled amount of intravesical pressure.

Following recovery from the spinal shock and provided no major infection has set in, the "atomic cord bladder" becomes an "autonomic cord bladder". This is particularly evident in patients in whom the spinal cord has been transected, though this type of bladder is probably

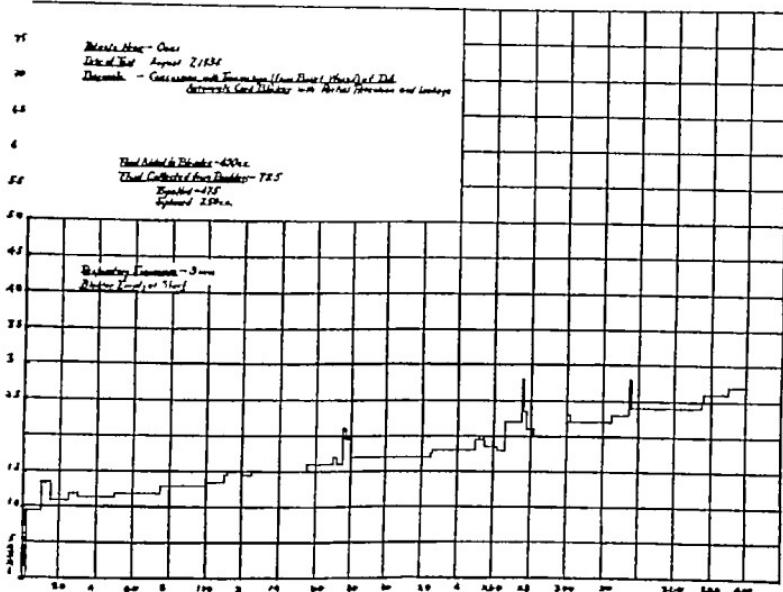


FIGURE 4. Graph of activity of "Autonomic Cord Bladder" 10 days after injury and before institution of tidal drainage. Retention with leakage and residual urine. Abscissa shows co. of fill and ordinate cm. of pressure.

tractility of the bladder wall and external sphincter, and divides these cases into four groups.

The "atomic cord bladder" forms the first of these groups. (Figure 3.) Following all cord injuries whether transection, contusion, concussion, hematoma, or edema, there is a period of spinal shock. While this phenomenon lasts, the bladder reflex like all segmental spinal reflex activity becomes inhibited or temporarily destroyed. A characteristic of this inhibition is complete atonia of the detrusor muscle. A reciprocal contraction of the internal sphincter is associated with this lack of tone. Retention of urine and overdistension of the bladder result. If unrelieved, this in its turn produces a varying degree of permanent damage to its muscle fibres, residual urine and spreading infection. If the infection assumes major proportions before the period of spinal shock is past this in itself continues the areflexia until death or re-

covery at an unduly late date ensues. Tidal drainage not only prevents this distention but provides regular irrigation and alternate stretch and relaxation of the bladder wall under a controlled amount of intravesical pressure.

This forms the second group of cord bladders (Figure 4.) Reflex activity returns in the form of inefficient detrusor contractions which are probably mediated by the autonomic neural plexus in the bladder wall itself.<sup>2</sup> These contractions open the internal sphincter (the external being still flaccid) but fail to expel any urine. A leaky overflow bladder results. Tidal drainage keeps such a patient dry and permits the weak bladder contractions to exert their maximum effect and thus aid in the return of the more efficient spinal reflex mechanism. (Figure 5.)

Further bladder activity resulting from a more complete recovery of the cord injury depends on the type of original injury and the level of maximum damage. The so-called "cord bladder" is commonly associated with transection and discussion at this time is limited to such cases. They make up the remainder of

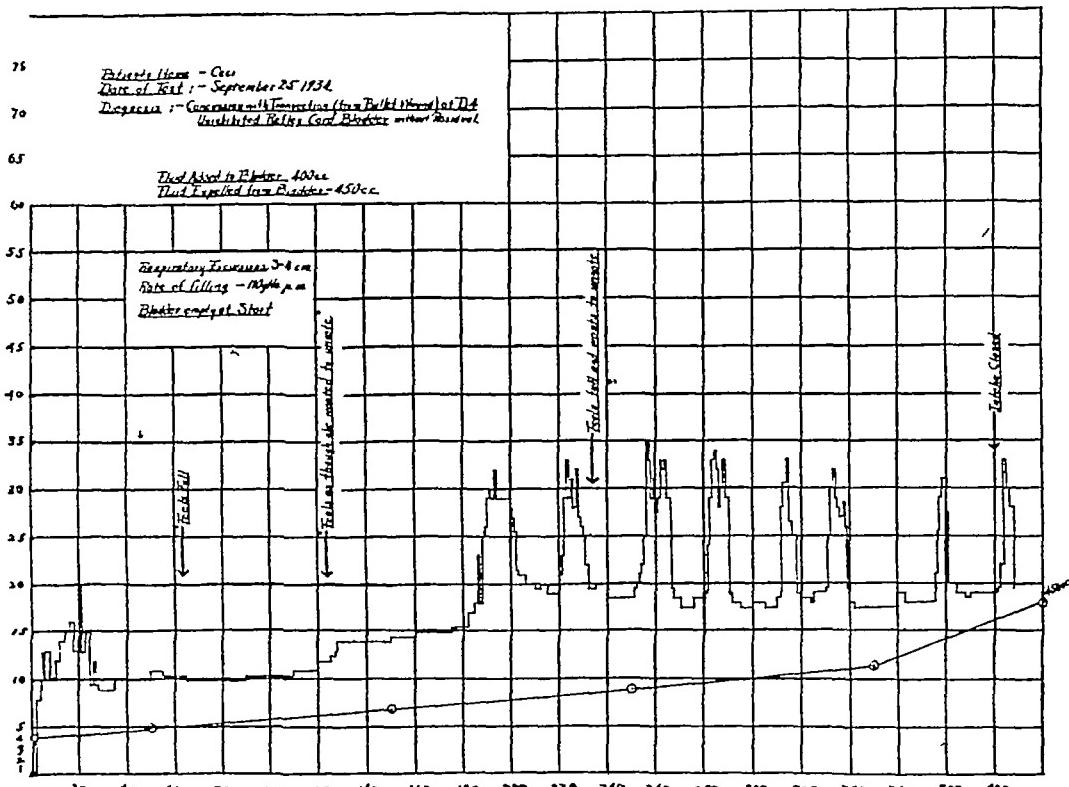


FIGURE 5 Graph of activity of same bladder as in Figure 4 after 5 1/4 weeks of tidal drainage. Bladder now uninhibited reflex type. No retention no leakage and no residual. Complete emptying by means of unaided bladder contractions. Abscissa shows cc. of fill and ordinate cm of pressure.

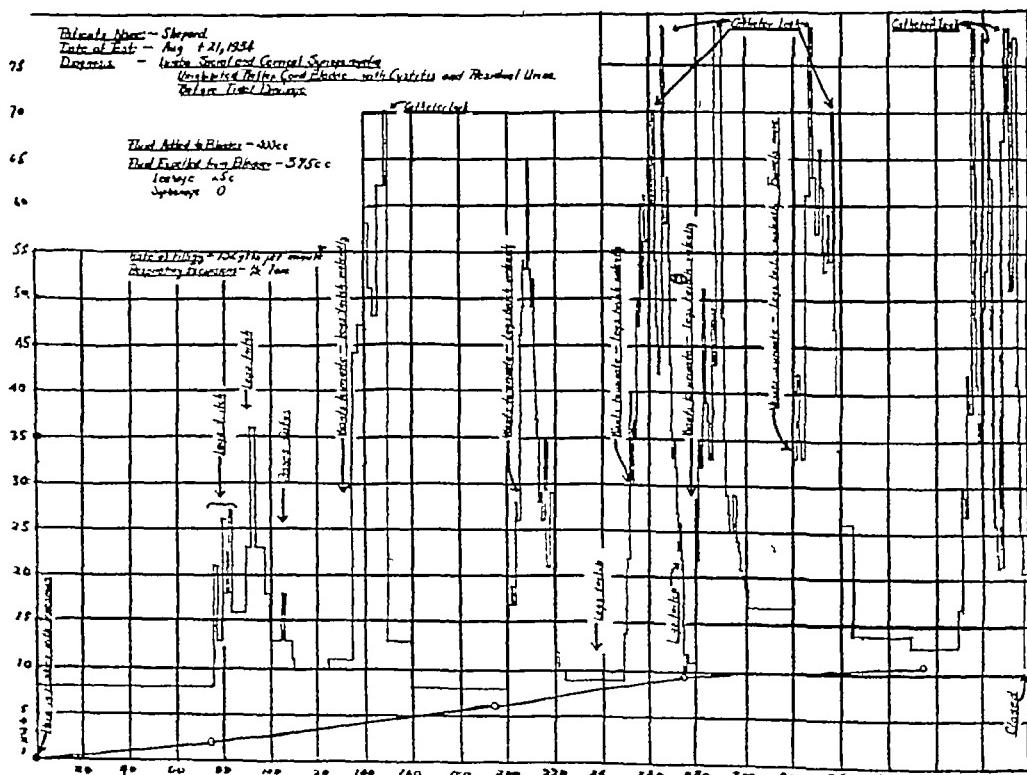


FIGURE 6 Graph of activity of inefficient 'Uninhibited Reflex Cord Bladder' with cystitis toxemia, tenesmus and residual urine. Abscissa shows cc. of fill and ordinate cm of pressure.

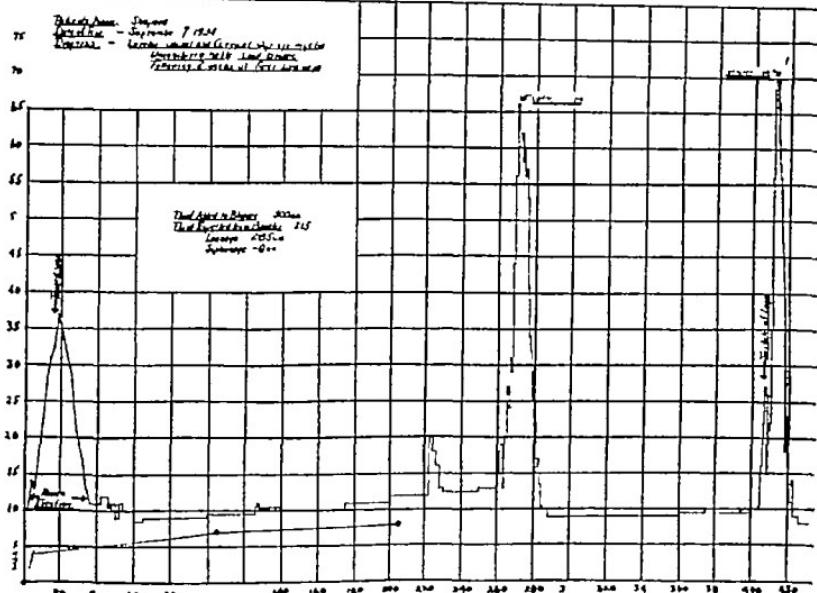


FIGURE 7. Graph of activity of the same bladder as in Figure 6, after 17 days of tidal drainage. "Microscopic Crystalluria" only normal temperature for 18 days, no tenderness and no residual urine. Abcissa shows cc. of fill and ordinate cm. of pressure.

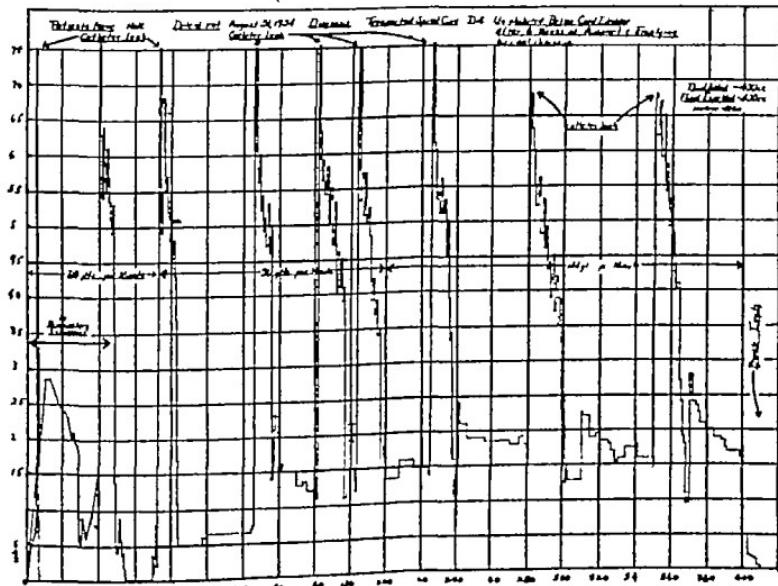


FIGURE 8. Graph of so-called "Automatic Cord Illad" which is actually an overactive inefficient "Uninhibited Badex Cord Bladder". Unduly frequent evacuation with constant "wetting" and marked shrinking of bladder capacity due to constant contraction. Urine: No crystalluria. Abcissa shows cc. of fill and ordinate cm. of pressure.

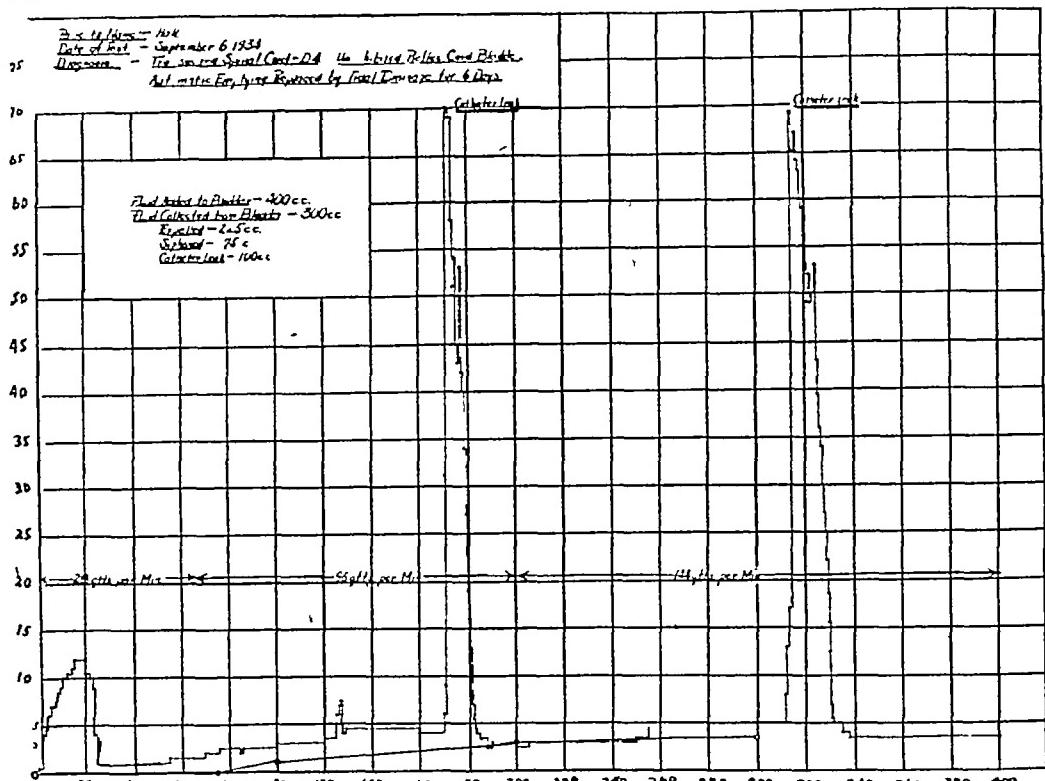
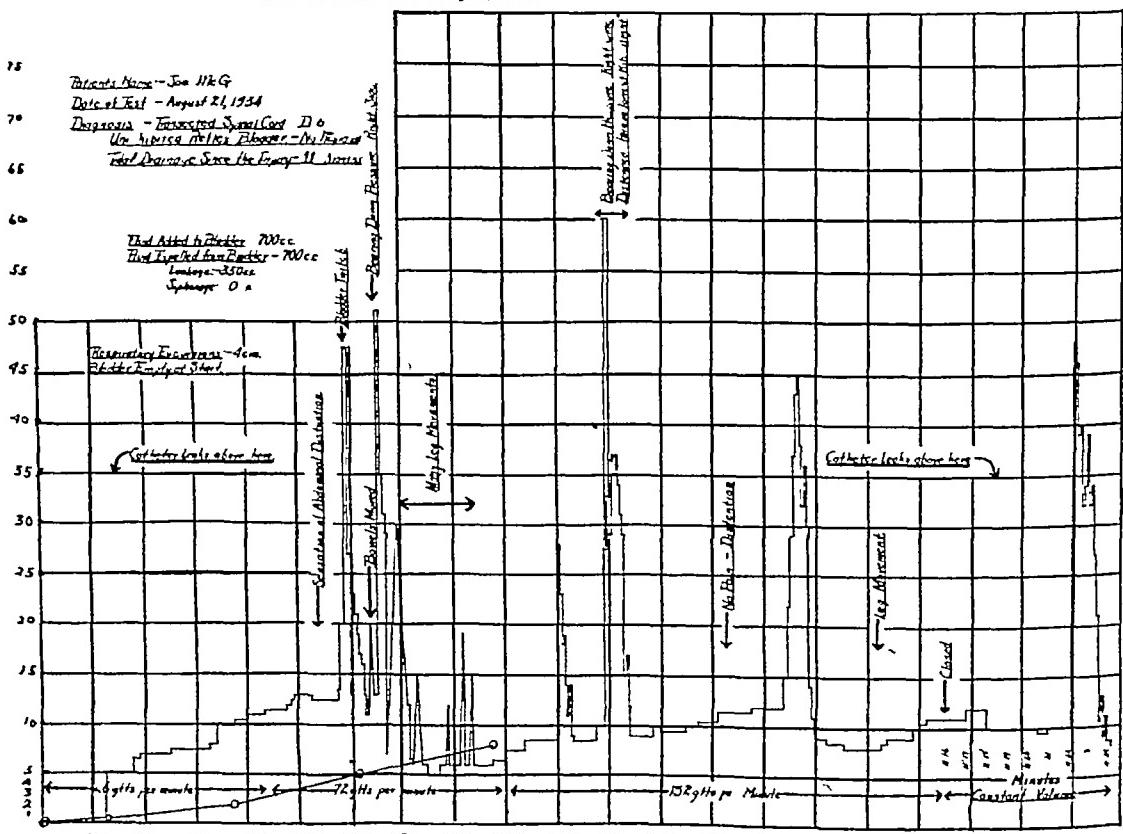


FIGURE 9 Graph of activity of the same bladder as in Figure 8 following 7 days of tidal drainage. Normal rate of contractions and bladder capacity. Abscissa shows cc. of fill and ordinate cm. of pressure.



**FIGURE 10** Graph of activity of 'Uninhibited Reflex Cord Bladder' following tidal drainage since the accident 11 months previously. Repeated cystoscopies, ureteral catheterizations and pyelograms show that the genito-urinary tract is completely normal except for a mild cystitis. Bladder empties completely unaided. There is no residual urine and the capacity of the bladder is normal. Abscissæ shows cc. of fill and ordinates

• CHARLES FREDERIC JONES  
PUBLISHED FOR THE AUTHOR  
BY HENRY C. CLARK & CO.,  
BOSTON,  
1855.  
THIS IS ONE OF THE  
FIRST EDITIONS OF THIS WORK.  
THE AUTHOR IS A MEMBER  
OF THE CHURCH OF CHRIST,  
AND IS A BAPTIST.  
THE AUTHOR IS A MEMBER  
OF THE CHURCH OF CHRIST,  
AND IS A BAPTIST.  
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THE AUTHOR IS A MEMBER  
OF THE CHURCH OF CHRIST,  
AND IS A BAPTIST.

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13. At least one additional 10 percent  
of capacity will be lost if the  
amount to be replaced is more than  
10 percent of the original or if there  
is more than 10 percent loss in  
the system. The 10 percent rule  
will apply even if the  
original bank is 10 percent larger  
than the new one. This is because  
of the nature of economies of scale.  
In other words, the cost per unit  
is reduced when the size of each  
unit is increased.

question uppermost during the War was, "Shall a patient with a spinal cord injury be immediately catheterized, or not?" There were those who held that immediate catheterization of such a patient merely hastened his death by infection. There were others who took the opposite view, saying that if the bladder were not emptied, it became overdistended, the sphincteric muscles were so spastic that the bladder could not be emptied and that its wall becoming inefficient, infection and early death were promoted by such noninterference.

I am not clear in my mind exactly what advantages Dr Munro ascribes to tidal drainage over constant drainage. The tidal element in his drain age apparatus must be designed to exercise the bladder wall, or at least to give opportunity for the bladder to fill and contract continuously as it does during normal life. This may be a wise procedure or it may not. I am not sufficiently familiar with this method of treatment to be able to form any judgment in the matter. I do feel, however, that one of the factors in the bladder whose nervous mechanism is upset, does not rest entirely in the bladder itself. I refer to the very important factor of regurgitation of bladder contents upward toward each kidney through the ureters. I have no personal doubt that regurgitation of bladder contents upward takes place under certain circumstances in all of us in complete health. If one studies a series of cystograms made by the roentgenologist to illustrate the outline of the normal bladder, it is easy to note regurgitation of the fluid used to fill the bladder upward into one or both of the ureters. In the past my associates and I have demonstrated experimentally in very definite manner that under certain conditions of balanced intravesical pressure plus the question of irritability of the bladder wall, there may occur, and there can be caused to occur, upward progression of the bladder contents to each kidney. This phenomenon can be seen in bladders in which the uretero-vesical valve mechanism is entirely normal. It is this factor in those bladders whose neurogenic balance has been upset, which I feel to be of great importance, even greater than that as regards the absolute integrity of the detrusor muscle.

I should like very much to ask Dr Munro in closing to tell us whether with this apparatus he is attempting to treat the bladder per se, or, on the other hand, is attempting to prevent death from urosepsis. It is one thing to keep the bladder wall exercised but it is an entirely different matter to keep it free from infection.

My feeling is that this apparatus will be applied more successfully in those lesions in which the underlying condition in the spinal cord may be susceptible of recovery, as, for instance, in the temporary upset of bladder function during and following enucleation of a cord tumor. That any method of this sort, tidal or not, will prevent urinary infection in the transverse lesions of the cord caused by a broken back, I very much doubt.

DR. DAVID CHEEVER, Boston, Mass. This isn't any further discussion, but evidently a very careful piece of work on the part of Dr Munro, has been done. As I am not a graduate in hydraulic engineering, of the Massachusetts Institute of Technology, I don't mind saying that I don't understand fully the apparatus, and I should be very much interested if it were possible and time permitted, to have Dr Munro's diagram thrown on the screen so that he could take the pointer and show us just how it works.

DR. DONALD MUNRO, Boston, Mass. (Slide.) The apparatus works because the siphon tube comes off

between the bladder and a reservoir which collects the irrigating fluid before it enters the bladder. It also works because the emptying of the reservoir takes place at half the rate of the emptying of the bladder, the size of this tubing here being reduced to half the size of this opening here, or less.

Perhaps it will be more understandable if I go through what happens. The irrigating fluid is placed in the container, and drops through here at any rate one chooses to use, forty to sixty drops a minute, flows down here, fills this reservoir and while it is filling this reservoir, the air escapes through the air vent or manometer. The fluid completely fills the reservoir and then rises in this tubing and this tube to the level here, after which the fluid flows in this direction in through a catheter along this arm of the T tubes, to enter the bladder.

It will do that whether the bladder is higher or lower than this tubing, provided the pressure is sufficiently high from this point.

After the bladder is full, the fluid from the reservoir, or rather from the container, instead of entering the reservoir or bladder—there is no place else for it to go except up these various tubings—enters here and here, and in this arm of the siphon, and when it reaches this point, the apex of the siphon, the addition of a small amount of fluid causes the overflow to take place down this tubing, into the waste bottle. That starts a siphon action which draws simultaneously from the reservoir and also from the bladder, however, only half as fast from the reservoir as the bladder, because the outlet is half the size in the reservoir that it is to the bladder. Therefore the bladder empties first, and the siphon is not broken, because until the reservoir is emptied, there is still fluid remaining in the air vent, and the siphon won't break until air can get into the circuit.

That break takes place, when with all the fluid removed from the reservoir, the column of fluid in the air vent comes down into the reservoir, and air enters after it and rushes up through here, and breaks the siphon.

DR. CHEEVER. Very satisfactory. How long does that cycle take?

DR. MUNRO. It depends on the rate of filling of the bladder, ordinarily from two to three hours. The emptying cycle takes place in perhaps a couple of minutes.

DR. QUINBY. How much intravesical pressure do you work up with it?

DR. MUNRO. That depends on how distended you wish the bladder to be.

DR. QUINBY. How much pressure do you get up?

DR. MUNRO. Pressure up to over 80 centimeters of water, if you raise the siphon sufficiently high. Personally, I never have run over 30 centimeters.

In the case that had the cystitis and tenesmus, where the bladder was very much shut down, and also the case with an automatic bladder, where the bladder was even more shut down, we ran both those bladders on a high intervesical pressure and stretched the bladder out.

The report covering the therapeutic part of this is only preliminary and I know a great many changes will have to be made in our conclusions, but this method has now been used on ten spinal cord injuries at varying times, the longest being a year, and it has proved very satisfactory in our hands. If it has done nothing else, it has simplified the nursing problems in these cases, and I am sure it has reduced the incidence of decubitus ulcerations. We had one case completely free of these ulcerations for four months who was allowed to re-

-four hours as a result of a mis-  
" whereupon he promptly devel-  
We healed all the others I think,  
able to do previous to the use

Quinby's questions I think that of bladder recovery and life and is so mixed up that an apparatus prevent the other without or the second

"on that, as you say urinary  
major factor in the production of  
cord injury particularly tran-  
sient but there is also no question, I  
think the injury to the cord is above  
the bladder may reasonably be  
and resume essentially normal  
keep down the systemic infec-  
tion from the presence of residual  
urine in the bladder

... or the bladder has been that this cannot be done using catheter drainage on account of actually draining the blad-

## OF TUBERCULOSIS IN SIGHT?

—age in the mortality from tuberculosis achievement in the modern campaign. In 1900 deaths from all causes in the ten Original Registration Districts of Columbia numbered

In 1933 the rate was only 17. This is a decrease of 1 per cent of the century and represents 170 000 persons who would have died in 1933 had the rate of 1900 been maintained. The United States in that year showed a general improvement in the health of people live and work has increased the mortality from tuberculosis and our increased knowledge of its treatment has also helped to reduce the number of deaths. Add to this the number of cases that have been partially restored to work, the children who have been spared orphanhood and the number of families that have been saved from disruption by tuberculosis and we have a picture of the splendid achievement.

this disease. The agencies' treatment built up by the anti- have been both efficient and

trying period of unemployment  
at the deathrate from tubercu-

der due to the position of the inner end of the catheter. Hydraulically speaking, those bladders drain by siphonage. If the bladder is atomic your siphon won't empty the bladder cavity completely unless the bladder end of the catheter remains constantly under water and it is almost impossible to arrange at least in my clinic, to have it stay constantly in that position in the bladder. It is either moved out or pushed in too far or partly plugged or in any event, residual urine seems to collect and with that infection develops.

I am glad now that there is some reliable information about the regurgitation of urine up the ureters in these spinal cord cases. Dr Quinby's statement contradicts a statement made by Fullerton, who studied some of Holmes' cases immediately following spinal injury with a cystoscope. In those cases he claims he was able to show that the ureteral activity was normal and that there was no giving-way of the ureteral valve. He also claims that he did this to these cases during a period of spinal shock. I don't know any confirmatory or non-confirmed work other than that.

losis has continued to decline. In 1933 deaths from tuberculosis numbered 59.5 per 100,000 in the United States as a whole as against 71.0 in 1930, a decline of 16.2 per cent in three years. By every indication the figure for 1934 will continue the trend of improvement.

When the states are considered separately we find considerable variability however. The range of the decline in the last three years is between a maximum of 3. per cent and a minimum of 2 per cent. Two states show increases, 9 per cent in Idaho and 3 per cent in Delaware. Seven states show decreases from tuberculosis of 5 per cent or more to a drop ranging between 20 per cent and .5 per cent. 17 between 15 per cent and 20 per cent 6 between 10 per cent and 15 per cent. In the remainder there were declines of less than 10 per cent. These variations in the recent decline in tuberculosis mortality should however be considered in relation to the relative ranking of the states in their tuberculosis deathrates since as the deathrates from tuberculosis approach a minimum it becomes increasingly difficult to effect further reductions. It is, therefore not to the discredit of states with low tuberculosis mortality rates when they fail to show large declines from year to year. There are some striking exceptions even to this general rule. A few states with very low rates show pronounced decreases since 1930. North Dakota and Utah for example.—*Bulletin Metropolitan Life Insurance Com*

## DIAPHRAGMATIC HERNIA AT THE ESOPHAGEAL HIATUS, THE SHORT ESOPHAGUS AND THORACIC STOMACH\*

BY P. E. TRUESDALE, M.D.†

**I**N recording the fourth in a series of six cases of diaphragmatic hernia at the esophageal hiatus in adults and involving the stomach alone, we found the attendant problems engaging. The severity of symptoms and the analogy of the complaints with those of angina pectoris were somewhat striking. The appearance of only a small portion of the stomach above the diaphragm, the x-ray manifestation of congenital short esophagus, and a not entirely satisfactory end-result, place this case in a debatable category of herniae of the diaphragm.

The appearance of the herniated portion of the stomach in a breach of this type is not always uniform. Though our group of cases operated upon is too small to warrant dogmatic statements in accounting for variations manifested, nevertheless in every case we have observed evidence of old inflammatory changes in and around the hernia somewhat similar to those found in umbilical hernia and less frequently in inguinal hernia. Adhesions of the stomach occur within the hernial sac. Fibrous bands connecting the sac with the esophagus, pericardium, and lung are common if not characteristic of this type of hernia. No doubt they cause suspension and angulation of the cardia and mechanical interference with the passage of food. Likewise, the associated deformities may make ejection of food from the stomach difficult. In the case recorded below, our attention was called to the appearance of this phenomenon by the patient's physician, Dr. Byron J. Brown, who described the fluoroscopic picture of barium in the lower esophagus as fluctuating like a column of mercury under varying degrees of pressure in a manometer.

### CASE REPORT

**CASE IV** I. D., female, aged forty three, housewife, was admitted to the Truesdale Hospital, December 12, 1933. Her only offspring was a premature infant born in 1914. The child died after seven months. The patient had a tonsillectomy in 1905 and hysterectomy in 1915. When admitted her chief complaint was upper abdominal and substernal pain, radiating to the left shoulder and down the left arm. The onset occurred in 1930. While pulling on a frozen clothes line she felt something tear or give way suddenly in her left upper chest. The following day she felt sharp pains across the extreme upper abdomen. For the next three weeks she was in bed with the same severe pain and vomited frequently. Her attending physician diagnosed the attack as biliary colic and advised her to be operated upon. After she recovered from the attack, she was able to continue her usual household

duties. Nevertheless there persisted a feeling of fullness in the epigastrum and pain in the left upper thoracic region after eating, more troublesome when she was in the recumbent position. In 1931 another severe attack of upper abdominal pain was ascribed to gall stones. She was sent to the Rhode Island Hospital where a cholecystogram demonstrated a normally functioning gall bladder and no indication of the presence of stones.

Nine months later in April, 1933, the pain became more persistent. It was epigastric, substernal, radiating to the back and down the left arm to the elbow. At times she would sense a feeling of suffocation, dyspnea, and tachycardia. Further x-ray examination at the Rhode Island Hospital revealed a diaphragmatic hernia. She was given symptomatic treatment.

For the intervening period of eight months this patient has been unable to do her housework. She has lost twenty pounds in weight. Another roentgenologic study of her case was made by Dr. Russell R. Hunt. The existence of a diaphragmatic hernia was confirmed and Dr. Brown referred the patient to our clinic for operation.

Very little evidence of a helpful nature was found on physical examination. The patient was an intelligent, cooperative woman. Her pupils were equal and regular, reacting to light and accommodation. Reflexes were normal. Systolic blood pressure was 130, diastolic 80. Blood vessels were not tortuous or sclerotic. The heart sounds were normal and the lungs clear.

The impression of the examiner was that the diagnosis of diaphragmatic hernia could not be made clinically, that it must be contingent upon roentgen ray findings.

X-ray examination of the chest on December 7, 1933 showed the lungs clear. The cardiac shadow was normal, but there was a rounded area of decreased density to the left of the spine behind the heart. Its upper level was opposite the eighth interspace posteriorly.

The esophagus appeared normal down to the level of the eighth interspace where it joined the stomach. Its course showed no kinking or redundancy. The hiatus in the diaphragm was opposite the eleventh rib posteriorly and was dilated. The body of the stomach, pylorus, and first portion of the duodenum appeared normal. Impression: congenital short esophagus, diaphragmatic hernia at the *hiatus esophagus*.

Cholecystograms revealed a smoothly outlined, dense gall bladder shadow at fifteen hours and no visible calculi. Films one hour p.c. showed complete disappearance of the shadow.

The electrocardiographic tracing showed myocardial changes as indicated by the slurring of the Q R S waves in all leads and left axis deviation.

### DIFFERENTIAL DIAGNOSIS

Dr. William Mason. The symptoms in this case illustrate well the problems involved in the clinical diagnosis of esophageal hernia of the diaphragm. The attacks of pain in the upper abdomen and left chest radiating to the back and down the left arm when accompanied by dyspnea immediately suggest a cardiac origin. The atypical radiation of the pain to the back, its occurrence without relation to exertion, and the limited degree of cardiac pathology would seem sufficient to rule out anginal attacks of coronary disease.

\*Read before the Rhode Island Medical Society March 1 1934.

†Truesdale Philemon E.—Surgeon Truesdale Hospital Fall River Mass. For record and address of author see This Week's Issue page 271.

Radiation of pain to the back and the presence of gaseous indigestion distress and vomiting especially when occurring in a female patient of mid life age, are rather characteristic of gall bladder disease. The tendency of the pain to radiate more prominently to the left side does not rule out this diagnosis but is nevertheless unusual. The demonstration of a normally functioning gall bladder by x-ray is however the strongest evidence against this diagnosis.

If, then, we view the symptoms in relation to the other upper abdominal organs we do not find them definitive of any disease picture. They have not the regularity or food relief characteristics of peptic ulcer. There is no confirmatory evidence of carcinoma of the stomach or obstructive lesion in the colon. A pancreatic disturbance cannot be ruled out except by positive evidence establishing another diagnosis. The clinical picture however offers little more than a suggestion of pancreatitis.

There is, however one feature in this case not common to those similar in other respects namely the acute onset with the sensation of something giving or tearing in the left chest and occurring coincident with a strain entailing a rise of intra-abdominal pressure. This feature especially when viewed in the light of subsequent symptoms suggests strongly diaphragmatic hernia. Finally extensive traumatic rupture of the body of the dia phragm with migration of the stomach small intestine colon and spleen into the thoracic cavity usually affords physical signs permitting a purely clinical diagnosis. The smaller herniation of a portion of the stomach through the esophageal hiatus gives no such signs and therefore a clinical diagnosis cannot be expected. The presence of this condition however must be suspected in a patient with upper abdominal and left thoracic pain anginoid in character when accompanied by digestive symptoms aggravated by lying down, and suggestive but not typical of the more common upper abdominal lesions. In such cases no other diagnosis should be made by the process of exclusion until esophageal hernia has been ruled out by an x-ray examination. This examination can be considered adequate only if the patient has been examined lying on the back in the Trendelenburg position following the ingestion of barium.

#### OPERATION

On December 12 1933 under gas-oxygen-ether positive pressure anesthesia administered by Dr Albert H. Miller the region of the hernia was exposed through a transthoracic approach. The cardiac portion of the stomach was observed projecting through the esophageal aperture which was considerably enlarged. The stomach covered by a very thin membrane was adherent to the pericardium the base of the left lung the pleuroperitoneal margin of the hernial aperture and for several centimeters along the esophagus itself (See figure 1). The stomach was easily separated from the esophagus by sponge dissection then freed from adhesions to the lung and pericardium and reduced to its normal position below the diaphragm. The phrenic nerve was then oriented elevated, and injected with alcohol. Closure of the aperture in the diaphragm which was approximately six centimeters at its widest point constituted the next step. At the mesial portion which formed the base of a triangular opening made by the diverging crura, there was some difficulty in obtaining substantial muscular tissue to reduce the hiatus to a size more nearly normal (See figure 2) The thoracotomy incision was then closed.

The patient made a good postoperative recovery. Her only complaint was pain and soreness in the primary incision. On January 13 1934 after a con-

valescence of uncomplicated progress she was discharged apparently relieved of symptoms for which operation was done.

This woman entered the hospital for observation August 21 1934 approximately eight months after operation. Although the symptoms of dysphagia have disappeared and deglutition is now unimpeded

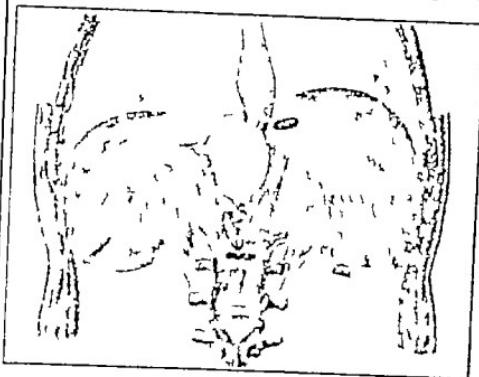


FIG. 1

and without distress she still suffers as before operation with pain under the left costal margin radiating to the back and at times down the left arm. She also complains of occasional tachycardia. She states however that she feels stronger than before operation but has gained only two pounds in weight.

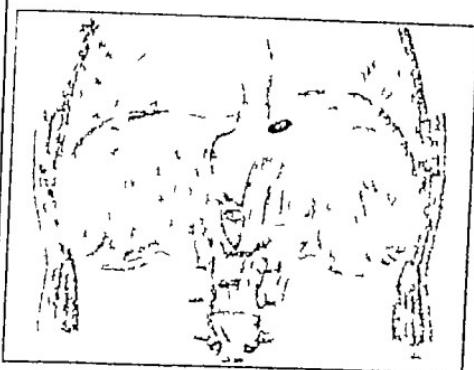


FIG. 2

We kept her in bed for a week on a Sippy diet. During this time she felt much improved and continued this regimen after leaving the hospital. Therefore though this patient was not cured of all the complaints for which she entered the hospital she has maintained her weight, gained in strength and is relieved of the disturbing symptoms associated with deglutition.

The x-ray film showed the stomach in the same position as at the time of discharge. The esophageal hiatus was smaller than before operation, but it still appeared to the roentgenologist that a small portion of the cardiac end of the stomach was above the diaphragm. Thus we may consider this patient improved but not entirely well.

c The short esophagus is the result of cessation of traction upon it by the stomach which has assumed a position in the thorax

4 In many instances a short esophagus of a few centimeters is the result of inflammatory changes at its lower end

5 Reasonably accurate deductions as to the position of the stomach and the length of the esophagus can be made only by careful observation at the operating table or at autopsy

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## STUDIES ON OVARIAN DYSFUNCTION\*

## II The Application of the "Hormonal Measuring Sticks" to the Sorting Out and to the Treatment of the Various Types of Amenorrhoea

BY FULLER ALBRIGHT, M.D.,† AND JAMES A. HALSTED, M.D.†

**I**N the first paper of this series<sup>1</sup> values obtained with two hormonal "measuring sticks" on normal individuals were given. One of the most useful clinical applications of these measuring sticks is in the sorting out of the various types of amenorrhoea, especially since the choice of treatment depends on the type of

amenorrhoea. A further use may be in the estimation of the success of the treatment instituted.

Since amenorrhoea is the lack of menstruation, a short discussion of the hormonal aspects of this phenomenon is paramount. Our most accurate knowledge in this field concerns the factors influencing uterine bleeding in Rhesus monkeys. As far as is known, only two hormones act on the uterine endometrium, namely the two ovarian hormones, estrin and progestin. The former hormone causes the uterine glands to grow longer (mitoses in epithelium), the latter causes them to secrete (secretory activity in cytoplasm of epithelial cells). Progestin, how-

\*From the Ovarian Dysfunction Clinic of the Massachusetts General Hospital. This investigation was made possible by a grant from the Delamar Mobile Research Fund.

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ever, acts only after the endometrium has been "primed" with estrin. Since these hormones are apparently the only two involved and since both can now be obtained in active extracts it should be possible in castrated monkeys to learn just what are the factors associated with uterine bleeding. Such experiments have been reported by Engle, Smith and Shelesuyak<sup>2</sup> and the results seem quite clear. If a female monkey is castrated the endometrium, of course, becomes atrophied, if now estrin is given for a period of time, this endometrium proliferates; if estrin is now stopped, a regression occurs associated with uterine bleeding. Thus this bleeding is a manifestation of the breaking down of a built-up structure when the substance producing this structure is removed. This is not all however. If the castrated monkey receives estrin for a period of time and then receives progestin in addition the endometrium undergoes a further change to the secreting phase, if now the progestin injections are stopped while estrin is continued, there is again a regression and uterine bleeding occurs. In this case a more complicated structure has been built up with the use of a second hormone and the bleeding is again the manifestation of the breaking down of this built-up structure when the second hormone is stopped. Uterine bleeding in the monkey therefore, is apparently due to cessation of estrin production in a cycle where only estrin is being produced or to cessation of progestin production in a cycle where both are being produced.

If the factors are as simple as the above experiments indicate, it would be easy to list the possible causes of lack of uterine bleeding in monkeys. The two main headings would comprise those where no endometrial structure was built up because of a lack of hormones and those where the structure, once built up was maintained because of a persistence of hormones. There would be in addition those where the hormones were all right, but where the structure acted upon was at fault, e.g., some uterine abnormality. The hypo-hormonal group could be further subdivided into primary ovarian lack of function and that secondary to pituitary hypofunction.

These would constitute five groups as follows:

- |   |                     |
|---|---------------------|
| I Hypoestrinism—primary ovarian                                     | Hypo-hormonal       |
| II Hypoestrinism—secondary to pituitary hypofunction                |                     |
| III Persistent estrin formation where no progestin had been formed. | Persistent hormonal |
| IV Persistent estrin and progestin formation                        |                     |
| V Endometrial abnormalities   | Normal hormonal     |

The next question is how closely uterine bleeding in monkeys is analogous to menstruation in women. Probably very closely. The most controversial question is whether the anovulatory cycle which occurs in monkeys occurs in women. Since a corpus luteum, and hence progestin formation, is the sequel of ovulation, this question in terms of hormones comes down to whether menstruation is always the breaking down of an endometrium which has been built up by both hormones or whether in some instances it may not be the breaking down of an endometrium which has only been acted upon by estrin. The weight of opinion is swinging toward the latter view. It has been shown by several investigators<sup>3-5</sup> that oophorectomized women, like monkeys have uterine bleeding resembling menstruation about two days after cessation of estrin injections. This has likewise been our experience. Therefore it is almost fair to say that if an anovulatory cycle did exist in women, it would still be followed by something very similar, if not indistinguishable symptomatically, from menstruation. Therefore the five groups of lack of uterine bleeding in monkeys can probably be used for amenorrhoea in human beings.

#### I HYPOESTRINISM—DUE TO PRIMARY OVARIAN HYPOFUNCTION

There are several conditions which cause amenorrhoea of this nature. The most clear cut ones are, of course, bilateral oophorectomy (see patient 1) and roentgen irradiation of the ovaries (see patient 2). Menopause is a physiological form of primary ovarian hypofunction. It will be discussed more thoroughly in the next paper of this series. Those of the secondary amenorrhoeas which are the menopause coming at an abnormally early age menopause praecox as it were also belong here (see patient 3). Infections can destroy the ovary completely enough to cause this type of amenorrhoea. In addition some cases of primary amenorrhoea prove to be long in this group (see patient 4).

The hormonal "measuring sticks" clearly separate this group from all others. The assay of estrin in the twenty four hour urine ("E")<sup>6</sup> is, of course negative. The prolactin A test ("P A")<sup>7</sup> on the first morning specimen is positive showing that more than normal amounts of this substance are being produced. This important contribution was first made by Zondek<sup>8</sup> and fits in with several other facts, notably that there is an hypertrophy of the anterior pituitary in gonadectomized animals<sup>9</sup> and an increase in their content of prolactin A<sup>8</sup>. The myometrium is of course atrophied in this group as estrin is required to maintain it. Figure 1 (q v) shows in a schematic way the hormonal abnormalities in this group as compared with the normal.

By "E" and "P A" we mean the estrin and prolactin A test as done in the laboratory.

and one-half years' duration. She started to gain weight at about the time of her marriage eight years previously, increasing from 130 pounds to 190 pounds three years before admission, since which time she lost thirty pounds by diet. A child was born shortly after marriage. About one year later she began to miss periods and they finally stopped altogether. She had had very few if any hot flashes. Pelvic examination showed atrophied mucous membranes as seen after the menopause and a small uterus. It was impossible to obtain an endometrial biopsy confirming the fact that the endometrium was atrophied. Roentgen examination showed a normal pituitary fossa. The basal metabolic rate was plus five.

The tests were as follows:

Date	E	P A
7-17-33	0	Neg
10-23-33	0	
11-1-33		Neg
12-4-33	0	

The negative E test on December 4, 1933, was immediately after ten daily injections of 100 units of antophysin, making it appear unlikely that such treatment would be of help in this case (v discussion under "Treatment")

*Comment*—Without the tests, one might have considered the patient as suffering from menopause praecox (cf patient 3). The lack, or almost lack, of hot flashes was of course against such a diagnosis. This patient's pituitary lack seemed to be confined to the gonad stimulating hormone. Whether obesity is cause or effect is hard to say, but the former is more likely in spite of the fact that reduction of weight was without benefit in this case.

*Patient 7 Hypoestrinism—Secondary to Pituitary Hypofunction—Sudden Unexplained Onset*

The patient was first seen at twenty-five. Her catamenia started at twelve and one-half and was perfectly normal until twenty. She then had a scanty period following which she never had any more periods. She had no molimina of any kind following cessation of periods and no hot flashes. There was no important change of diet which could be elicited to account for sudden cessation. The history is unquestionably correct and complete.

On physical examination she was an exceptionally well developed and healthy appearing individual with a normal feminine figure. Hair distribution was normal. Breasts were well developed and firm. Pelvic examination showed a very small clitoris, a very small cervix and a uterus very small and freely movable. The smallness of the uterus was verified by lipiodol injection. The mucous membranes of the vagina were pinkish rather than slightly purplish.

The hormone tests repeatedly showed E = O P A = O. E remained negative in spite of a thorough trial of treatment with the gonad stimulating hormone of the urine of pregnant women.

*Comment*—An unusual case apparently due to a sudden loss of prolactin A production in the pituitary in a person who previous to sudden onset was perfectly normal. Other pituitary hormones were not involved.

*Patient 8 Secondary Amenorrhoea Simmond's Cachexia*

This patient, a married woman of 28, was first seen in October, 1933. She complained of amenorrhoea, sterility, headaches, loss of strength and loss of weight. Six years previously her periods became irregular and three years previously a cystic left ovary was removed because of left lower quadrant pains. She had no more periods except for one three months previously.

On physical examination her blood pressure was persistently low (90/70), the mucous membrane of the vagina was atrophied, cervix and uterus were small.

X ray showed an enlarged sella. The basal metabolic rate was minus 21. Urine tests P A = Neg E = O (repeatedly).

*Comment*—This patient's amenorrhoea is clearly of the hypopituitary type. In contrast to the findings in some of the other patients, in this patient all the hormones of the anterior pituitary are apparently deficient (cf low metabolism as evidence of decrease in thyrotrophic hormone, low blood pressure and asthenia, as evidence of decrease of adrenotropic factor). This patient's metabolism was elevated to plus four temporarily with the thyrotropic hormone and roentgen treatment of the pituitary resulted in marked clinical improvement.

*Patient 9 Hypoestrinism—Primary Pituitary Hypofunction—Onset after Pregnancy*

This patient, aged twenty seven, complained of sterility. Her catamenia began at twelve and was regular and normal in every way until after the birth of her only child in 1929. She nursed this child for six weeks, following which she had one period, but has had none since that time. She has had, to be sure, periodic molimina from time to time. Libido has remained normal.

Physical examination was entirely normal. The uterus was normal in size. The external genitalia were normal. There was no evidence of hypothyroidism.

Hormone tests E = O (three times), P A = O (two times).

*Comment*—The fact that this patient had molimina and normal-sized uterus made it obvious that her ovaries were not entirely without function, merely on the low side. The tests made it quite clear that she is primarily hypopituitary rather than hypo ovarian. Pregnancy was probably an etiological factor.

*Patient 10 Hypoestrinism—Secondary to Pituitary Hypofunction—Onset Following Inadequate Diet*

This patient consulted the Clinic in May, 1933 because of amenorrhoea. Her periods were regular until May, 1931 when she considered herself too fat and went on a "strict diet". Her flow was scanty during the next two months and then ceased altogether except for scanty periods in July and October, 1932, following theelol injections. She has had some suggestion of hot flashes. In spite of the fact that she has given up dieting, periods have not returned.

On physical examination she was well developed, anthropometric measurements were normal. Hair distribution was normal. Skin was dry. Uterus was normal in size. Basal metabolic rate was minus twenty six and minus twenty seven. Weight

was ninety pounds eighteen pounds below her best weight.

Hormone tests P A = Neg E = 0

**Comment**—This is a very frequent type of case and presumably attributable to a damage in prolactin A production by the pituitary due to insufficient building blocks. In some cases this damage is permanent, more often not. The low metabolism is likewise frequent. It may return to normal with adequate diet although one of our patients similar to this had to take thyroid indefinitely.

### III PERSISTENT ESTRIN FORMATION—WITHOUT PROGESTIN FORMATION

There is no absolute proof that this group exists but it probably does. It would be analogous, somewhat, to what occurs in rabbits. These animals when in heat can remain for months at a time with the ovarian follicles mature and the endometrium built up to its full estrin development. They require the added stimulus of copulation for ovulation and the development of corpora lutea and the progestin phase. In the condition in human beings called metropathia hemorrhagica, something quite similar probably occurs. Long periods of amenorrhoea followed by uterine bleeding characterize this condition. The bleeding is probably not true menstruation but sloughing of the hypertrophied endometrium so that even when bleeding these patients in a sense are amenorrhoeic. Their ovaries show evidence of estrin formation but no evidence of progestin formation. The changes in the endometrium are consistent with a long standing estrin effect. Their hormone tests usually show P A = Neg E = +. There is no indication from the E tests that this condition is a hyperestrinism. The evidence favors, we believe, an uninterrupted estrin effect. This condition, however, is so important that its handling is being reserved for a separate paper and for the collection of further data.

The following two case histories are of interest as possible examples of persistent estrin formation of a slightly different variety.

#### Patient 11 Persistent Estrin Formation—Infrequent Periods—Change to Rabbit form of Cycle'

This patient a married woman of thirty complained of sterility and infrequent catamenia. She was first seen on June 28 1931. Periods began at thirteen had always been infrequent lasted about seven days. Between periods she had a constant white vaginal discharge. Her last period began on May 4 the previous one November 16 1933. She had been married three years but had never become pregnant in spite of the fact that for the past year she has been very anxious to have children.

On physical examination she appeared exceptionally well. She had a very normal female figure. The breasts were very well developed. The mucous membrane of her vagina showed no evidence of atrophy the uterus was good sized.

The impression at this point was that this patient's amenorrhoea was not hypo-hormonal. From

the examination of her uterus and vagina it seemed certain that she was producing a normal amount of estrin as long standing lack of estrin causes regression of the myometrium and atrophy of the vagina. The tentative hypothesis was formulated that she ovulated only infrequently but between periods was during the majority of the time in a constant state ready to ovulate. This is about what takes place in rabbits which remain at the height of estrus with ripened follicles until the added stimulus of copulation causes ovulation. Such a hypothesis would explain this patient's continued white discharge, as estrin in large amounts causes such a discharge.

One had to make the further assumption that coitus in this patient, unlike the situation in rabbits was not followed by ovulation. This led to the suggestion that an endometrial biopsy a procedure which probably is often followed by ovulation might cause ovulation and that coitus after this procedure might result in pregnancy. The suggestion that an endometrial biopsy is apt to be followed by ovulation was made to us by Burchenal.

On July 5 P A was negative E showed twenty units confirming the suggestion that this patient was producing estrin. An endometrial biopsy done on this same day showed definite evidence of estrin effect—mitotic figures in the glands but no secretory activity. Within several weeks the patient developed symptoms of pregnancy and such a diagnosis was confirmed by an Aschheim-Zondek test. Thus all the data seem to fit the hypothesis suggested.

#### Patient 12 Persistent Estrin Formation—Amenorrhoea—A "Rabbit Form of Cycle"—Partial Sterility

This patient of twenty nine, married three years consulted the clinic September 26 1933. She had had periods every four weeks from the ages of 15 to 19 but for the past eight years only every six to eighteen months. They were rather profuse and lasted eight days. She had no periodic menses. Examination showed a rather obese woman with well-developed breasts and a feminine configuration. She had a slight amount of hair on the upper lip and abundant, though normal amount of pubic and axillary hair. The clitoris was moderately hypertrophied and the uterus and cervix were normal. One observer thought the right ovary was enlarged.

E was 14 units and 35 units on April 8 and 9 1934 respectively. P A was negative on April 14 1934.

She had but one period from September 1931 to January 1934 but during this interval she became pregnant without any specific treatment.

An endometrial biopsy taken after four months of amenorrhoea, showed a marked estrin effect but no secretory activity at all. Ten days after the biopsy she had a normal period.

**Comment**—The facts in this patient suggest a similar interpretation as that in patient 11. We believe that during the amenorrhoea phase she has a ripe follicle putting out estrin (cf biopsy and E tests). The biopsy, we believe, led to ovulation followed by a corpus luteum which stopped functioning at the normal time, with resulting menstruation. The fact that she became pregnant shows that eventually spontaneous ovulation occurs.

### IV PERSISTENT ESTRIN AND PROGESTIN FORMATION

The amenorrhoea of pregnancy and perhaps that of lactation are the obvious examples in

this group. There are in addition a few reports in the literature<sup>11 12</sup> where a woman misses one or more periods, develops the symptoms and some of the signs of pregnancy, is examined and found to have a mass in one vault, is operated upon for a presumable ectopic pregnancy, is found to have a corpus luteum cyst instead of an ectopic pregnancy, and lactates following the removal of the cyst. On one such patient a false positive Aschheim-Zondek test for pregnancy was obtained.<sup>13</sup> A very interesting patient reported by Wagner later developed definite findings of a pituitary tumor.<sup>14</sup>

We have not had an opportunity to study any such patient but the tests should be the same as during pregnancy, namely P A = ++, E = +++. In addition there would be a positive piolan B (P B) test.

#### V ENDOMETRIAL ABNORMALITIES

Obviously if there is a developmental absence of the uterus one might have normal hormonal factors and still amenorrhoea. The same would be true following hysterectomy. Patient 13 is probably an example of maldevelopment of the uterus.

#### Patient 13 Primary Amenorrhoea—Normal Hormone Tests—Fault with Uterus

This patient, aged nineteen, never had a period. The breasts were well developed. It was impossible to do a vaginal examination, but by rectum the uterus could not be felt. Hair distribution was normal. The ovaries were not palpable. The tests showed

Date	E	P A
6 7 33	28 units	
7 10 33		0
7 30 34	26 units	0

*Comment*—The tests confirmed the clinical impression that this patient was normal in respect to the hormones and that the trouble was entirely developmental.

#### BORDERLINE CASES

A discussion of certain cases bordering on the normal but probably belonging in groups I and II has been postponed until here. In group I the possibility exists for what might be termed a partly compensated hypoestrinism. Thus, a hypofunctioning ovary might be stimulated by an excess of Piolan A to produce detectable amounts of estrin. This might lead to the findings—E = +, P A = + (see patient 14). Presumably more accurate measuring sticks will show that E is really diminished in such cases. In a similar manner there are undoubtedly patients in group II who only have a partial hypo-function and whose tests might occasionally show E to be positive (see patient 14). A single pair of determinations might, therefore, be consistent with normal. Repeated E tests, however, would probably show estrin excretion to be decreased.

#### Patient 14 Hypoestrinism—Primary Ovarian—Partially "Compensated"

This patient, a trained nurse of twenty two, complained of amenorrhoea. She had had only one cata menia (October, 1933) during her entire life. She had had no periodic menses. Puberty occurred at fifteen.

On physical examination she had an only incompletely developed feminine figure, her breasts were only moderately well developed. Hair distribution was normal. The cervix and uterus were small. Her anthropometric measurements showed a disproportionate length of her long bones. Her basal metabolic was minus six. Her tests were as follows—

Date	P A	E
June, 1934	Slightly Positive	0
July, 1934	" "	38 units
Sept., 1934	Negative	0

*Comment*—From the physical examination and the history it was evident that this patient had hypoestrinism but not complete lack of this hormone. The finding of two negative E tests out of three was consistent with this. The P A tests likewise suggest only a moderate overactivity of the anterior pituitary.

#### Patient 15 Hypoestrinism—Secondary to Pituitary Hypofunction—Obesity

This patient consulted the Clinic in July, 1934, at the age of sixteen because of amenorrhoea. Her catamenia began at thirteen, but has never been regular. She has always been overweight. At one time with reduction of weight by diet her periods became quite regular, only to cease again after discontinuing the diet and gaining more weight. At the time of admission she had had no periods for six months.

On physical examination she was very obese, palms were warm and moist and there was no suggestion of hypothyroidism, breasts were well developed, external genitalia were normal.

The admission impression was that she had hypoestrinism, secondary to hypopituitarism, secondary to obesity. It was also clear that she was not entirely lacking in estrin. Tests—

Date	E	P A
8 6 34	10 units	Negative
9 7 34	0	Negative

*Comment*—The findings fit in with the diagnosis of hypoestrinism, on a hypopituitary basis in spite of the fact that one E test was positive.

#### TREATMENT

The subject of treatment is too long and as yet too uncertain to be discussed here in full. A few points seem pertinent, however. In the first place it is important to keep in mind just what one is striving to obtain. There is no use, except for psychological reasons, in bringing back "the curse", for example, if the patient's only complaint is sterility and if the measures employed to bring back the catamenia could in no way influence the sterility. One can be certain, however, that intelligent treatment in the future is going to rest on an accurate diagnosis of just what link is at fault. For example, administration of gonad stimulating substances is illogical when the patient's own

pituitary is already producing an excess of prolactin A to which the ovary will not respond. Furthermore, an ovary which is being under stimulated and is putting out neither ova nor estrin will not be stimulated to do so by estrin treatment. Such therapy is like expecting thyroxin to stimulate the thyroid to put out the thyroid hormone. The measuring sticks will, therefore, become very important, we believe, in deciding which specific treatment if any, to institute. They will also probably be of help in estimating the success of treatment. Thus, if a gonad stimulating substance is being used one would be encouraged to its further use by the finding that estrin appeared in the urine and vice versa if it did not (cf patients 7 and 8).

## SUMMARY

On the basis of the hormonal measuring sticks the various types of amenorrhoea have been divided into three groups—hypo-hormonal continuous hormonal and normal hormonal. The first group has been further divided into a subgroup where the ovary is intrinsically at fault and one where the ovarian hypofunction is secondary to that of the pituitary. The second group is divided into a sub-group where there is constant estrin production and one where there is constant production of both estrin and

progesterone. Clinical examples of the five groups are cited.

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A COMPARISON OF "YEAST MILK" AND IRRADIATED MILK  
IN THE TREATMENT OF INFANTILE RICKETS\*

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THE uncertainty existing in the minds of pediatricians and others regarding the relative clinical efficacy of vitamin D milks has been engendered by numerous factors. The misinterpretation often placed on a study by Hess<sup>1</sup> that irradiated milk of a given unitage has an anti-rachitic potency substantially as effective as twice that unitage in milk produced by feeding cows irradiated yeast, and the fact that commercial practice has restricted irradiated milk to a potency no higher than 55 units per quart, while yeast-fed cows' milk generally is marketed with a potency of 160 units per quart, have contributed to the confusion. A comparative study of the two types of milk, each with the same rat unitage, and administered in substantially equal amounts, should add information helpful in solving this question. At the time of the inception of the work herein reported only one such study, that by Kramer and

Gittleman<sup>2</sup>, had been published. Their findings did not bear out the implications of Hess's results referred to above. If further clinical tests should confirm the presumption that irradiated milk is clinically twice as potent, on the basis of rat units, as yeast fed cows' milk, there would then be an adequate justification for the existing disparity in levels of potency of these two kinds of vitamin D milk. If, on the other hand, it should be shown that a given unitage of either kind of milk is equally efficient in human anti-rachitic therapy it then seems probable that yeast milk with its present greater potency per quart offers more protection per unit of volume than does irradiated milk.

A review of previous clinical tests of vitamin D milk is omitted from the present report, since these have recently been analyzed and reported elsewhere<sup>3</sup>.

The investigation reported at this time was designed to compare infants with rickets in the Infants' Hospital in Boston under continuous supervision, by determining the actual measurable effects of prescribing to equal numbers of cases of definite rickets in infants, yeast milk or irradiated milk of equal rat unit potency in

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The yeast milk was from a special herd\*, fed a ration containing irradiated yeast in amounts calculated by the Fleischmann Yeast Company to produce a vitamin D milk of 50 rat units per quart. The irradiated milk\* was to be of the same potency.

Since in a comparative study of this sort, it is necessary that the unitage of each type of milk be definitely known at all times, it is essential that frequent or reliable bio-assays of the milks be made throughout the duration of the test. In the present case, five bio-assays of each kind of milk, with numerous International Standard parallel evaluations, were carried out at the Biological Laboratories of the Massachusetts Institute of Technology during the twelve weeks of the clinical investigation. Sealed quarts of the respective milks in each case were secured from the hospital immediately before assay. Each specimen was fed in suitable dilutions of whole milk to a group of ten albino rats, previously rendered rachitic, with due regard for weights of animals and food consumption, during the first eight days of a ten-day test period. On the tenth day, the degree of healing of rickets was determined by x-ray and line test. An equal number of control animals was held without antirachitic supplement during the entire period and subjected to similar diagnoses. The results of these findings are presented in table 1.

TABLE 1

## RESULTS OF BIO-ASSAYS OF YEAST MILK AND IRRADIATED MILK TOGETHER WITH INTERNATIONAL STANDARD EVALUATIONS

Date of Sample	Steenbock Rat Units per Quart*	Equivalence of One of Yeast Milk	Irradiated Milk	Steenbock Unit in International Units
Feb 12	More than 85	Barely 50		
Mar 1	More than 60	Less than 50		
Mar 19		Less than 50		
Mar 20			27	
Mar 25	65			
Apr 3			27	
Apr 19	60	55		
Apr 21			27	
May 10	65+	Barely 50		
May 11			27	

\*Wistar albino rats, 28 days old, 50-55 grams were rendered rachitic on Steenbock No. 2965 ration containing specially selected and aged corn. Whole milk suitably diluted with water and pipetted into separate jars was fed in 8 daily portions of 5 cc. per rat.

†International Standard Reference Oil diluted gravimetrically with olive oil was dispensed in calibrated drops directly into the mouth of each animal during eight days.

Since the initial assay of yeast milk showed too high a potency for this comparison study, the yeast ration of the cows was adjusted and the infant feeding of this milk deferred until subsequent assay showed a potency more nearly that of the irradiated product. While not pertinent to the present discussion, it may be of

passing interest to note that at the lowered levels of yeast feeding of cows, a mathematical reduction of the yeast ration was not followed by an arithmetically proportionate reduction in the antirachitic potency of the milk produced.

## OUTLINE OF CLINICAL EXPERIMENTS

A brief history of the six infants with active rickets who were selected for this study is presented, together with significant findings. On admission to the hospital the patients were placed in a separate ward and during a preliminary period each was given a simple calorifically adequate diet, without antirachitic supplement, to make certain that healing was not taking place. This was determined by roentgenograms of the right wrist and by determinations of the calcium and inorganic phosphorus content of the blood serum at regular intervals. The sera were separated immediately after being taken, and the inorganic phosphorus determined<sup>a</sup> at once. Two cc of serum were used for each calcium determination<sup>b</sup>. Having satisfied ourselves by these preliminary observations that healing was not taking place, the milk in the diet of three infants was replaced by irradiated milk, and that of the other three infants was replaced by yeast milk. During the test period roentgenograms and blood analyses were frequently made so that the progress of the treatment might be closely followed.

## CLINICAL RESULTS

*Irradiated Milk*

CASE 1—R. C., an Italian boy, 6 months old, weighing 15 pounds 8 ounces, was admitted to hospital January 13, with the diagnosis of active rickets.



FIG. 1 (Case 1) R. C. A = January 15 advanced rickets  
B = January 24 no change C = February 15 healing after  
22 days on irradiated milk D = March 10 further healing  
after 46 days

and eczema. He had been breast fed for 1½ months, and since then had been fed whole milk, water and maltose mixture. He had never received antirachitic treatment and had been given orange juice infrequently. Physical examination showed a fairly well developed and nourished infant who was very uncomfortable and irritable because of eczematous rash on the face. The remainder of his skin was clear except for roughness of hands. Craniotabes, Harrison's groove, rachitic rosary and enlarged epiphyseal ends of long bones were present. On admission he was placed on a diet of evaporated milk, Karo corn syrup and water, cereals, vegetables and orange juice. Behavior during the preliminary period and the history of the case indicated that

the patient had active advanced rickets. Irradiated milk was substituted for the evaporated milk on January 24. The data for this case are summarized in table 2.

CASE 2—N. L., a colored boy 7 months old, weighing 19 pounds 14 ounces was hospitalized February 13 because of rash on the face (eczema) and ac-



FIG. 2 (Case 2) N. L. A = February 1, all dark rickets; B = February 19, no change; C = March 2, slight healing after 6 days on irradiated milk; D = March 3, further healing after 27 days.

tive rickets. He had been wholly breastfed and had grown rapidly. Orange juice had been given occasionally and  $\frac{1}{2}$  teaspoon of cod liver oil had been given irregularly during the past month. Physical examination showed a well-developed and nourished Negro with a dry scaling exanthematous rash over the forehead, back, arms and legs. Prominent bosses, a rachitic rosary, Harrison's groove, and enlarged epiphyseal ends of the long bones were present. On admission he was given the ward diet mentioned in the history of Case 1. During the control period the Ca:P product rose from 29.4 to 39.1 but the roentgenograms showed no detectable change. The case was considered suitable for the study but not entirely satisfactory. Irradiated milk was substituted on February 24. The data are summarized in table 2.

CASE 3—C. F., a colored boy 26 months old, weighing 21 pounds 3 ounces, was hospitalized April 2 because of inability to walk with the diagnosis of active rickets. He had been breastfed during the first three months and then had been given condensed milk during the next four months and then had been given general diet. During the first 18 months he



FIG. 3 (Case 3) C. F.: A = April 2, advanced chronic rickets; B = April 18, no change; C = May 18, healing rickets after 22 days on irradiated milk; D = May 9, further healing after 41 days.

had received two teaspoons of cod liver oil daily and had never had orange or tomato juice. Since then he had received no antirachitic supplement. At seven months he sat up but to date had not walked. During the last three months he had cried with pain when handled. Physical examination showed a well-nourished colored boy small for his age with prominent frontal bosses, rachitic rosary, flaring thorax, Harrison's groove and enlargement of the epiphyseal ends of the long bones. After two weeks on ward diet roentgenograms showed no change although there had been a rise in serum phosphorus. Irradiated milk was substituted on April 18. On April 30 he developed measles from which there was an uneventful recovery. During this illness he was removed to the isolation ward but the same feeding régime was continued. The data for this case are summarized in table 3.

TABLE 2  
SUMMARY OF CLINICAL CASES  
(Irradiated Milk)

Case	Date 1934	Weight lbs-oz.	Milk oz./day	Calories per lb	Serum (mg %) Ca P	Ca:P Product	Roentgenograms
No. 1	1/15	15 8	23	48.6	7.8 3.9	30.42	Advanced active rickets
R. C.	1/23	15 8	23	48.3	6.3 3.5	23.05	No change
Age 6 mos. plus	1/24						
	2/1	15 7	26	49.6	11.7 3.4	39.78	No change
	2/10	16 4	28	52.2	11.2 4.4	49.28	No change
	2/16	16 11	28	51.3	9.9 5.7	56.43	Slight healing
	2/24	17 3	28	49.3	11.1 6.0	66.60	Further healing
	3/5	17 15	28	47.0	11.3 6.8	30.24	Further healing
	3/10	17 12	28		10.7 6.5	69.55	Further healing
No. 2	2/14	19 14			9.2 3.3	30.36	Advanced active rickets
N. L.	2/21	19 2	20	36.7	10.3 3.8	39.14	No change
Age 7 mos.	2/24	19 3	20	37.0	Irradiated milk started		No change
	3/3	18 14	20	38.5	9.8 4.0	39.20	Slight healing
	3/10	18 10	20	31.0	9.9 3.5	34.65	Very little change
	3/17	19 3	26	38.3	8.6 4.7	40.42	Healing
	3/23	19 7	26	36.3	11.2 5.8	64.96	Further healing
No. 3	4/2	21 3	33		10.1 2.3	23.23	Advanced chronic rickets
C. F.	4/9	21 8	32		10.7 3.3	35.31	No change
Age 6 mos.	4/16	21 13	32		10.5 3.5	36.75	No change
	4/18				Irradiated milk started		
	4/23	21 14	32		10.4 3.6	36.40	No change
	5/7				9.7 3.7	35.89	Healing rickets
	5/23				10.5 5.3	55.05	Further healing
	5/28	22 13	32		10.3 5.7	58.71	Further healing

*Yeast Milk*

CASE 4—J S, a Greek boy, 8 months old, weighing 10 pounds 14 ounces, was admitted on March 5 with a diagnosis of rickets. A premature baby with a birth weight of 4 pounds and 11 ounces, he had been cared for in a premature nursery for two months. Since then he had been on a well balanced

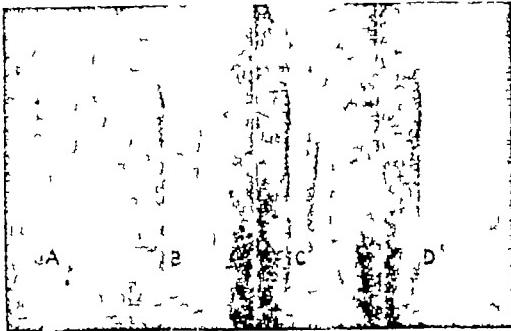


FIG 4 (Case 4) J S. A = March 6 advanced active rickets. B = March 19 no change. C = March 31 healing rickets after 12 days on yeast milk. D = April 28 further healing after 40 days.

diet of cow's milk and cereal supplemented with one ounce of orange juice daily. Four months before admission his mother was told that he had rickets and was advised to give him cod liver oil. This had been offered a few times but was discontinued because he refused his food. Physical examination showed a poorly developed and nourished, pale infant with prominent frontal and parietal bosses, craniotabes, rachitic rosary and enlarged epiphyseal ends of the long bones. On admission he had an acute upper respiratory tract infection. Because of the definite absence of antirachitic therapy in the history and because of the absence of signs of rachitic healing during the preliminary period on the ward diet, this patient was considered suitable for the study. Yeast milk was substituted on March 19. The data for this case are summarized in table 3.

CASE 5—L Z, an Italian girl, 9 months old, weighing 11 pounds 5 ounces, was admitted March 15 with the diagnosis of active rickets. A premature baby with a birth weight of 3½ pounds, she had remained in premature nursery care for four months. Since then she had been on a well balanced formula of cow's milk. No other food had been given. Cod liver oil had been given from the fourth to

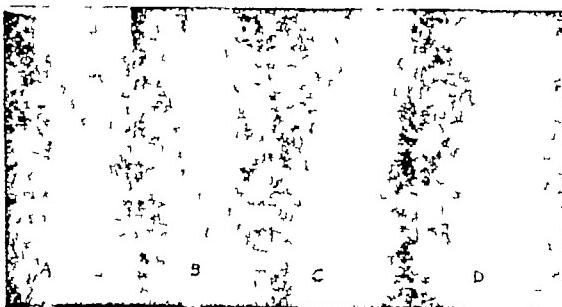


FIG 5 (Case 5) L Z. A = March 15 advanced active rickets. B = March 26 no change. C = April 10 slight healing after 22 days on yeast milk. D = April 16 further healing after 28 days.

the eighth month, 10 to 12 drops per day. Physical examination showed a small, pale infant with a profuse mucopurulent discharge, craniotabes, marked flattening of the right occiput, Harrison's groove, rachitic rosary and enlarged ends of the long bones. Cultures from the nose and throat showed

virulent Klebs Loeffler organisms and she was given 10,000 units of diphtheria antitoxin. Previous history and behavior during the preliminary period on the ward diet indicated that the case was suitable for the study. Yeast milk was substituted on March 19 and the study was continued in the isolation ward. The data for this case are summarized in table 3.

CASE 6—P R, an American girl, 22 months old, weighing 18 pounds 2 ounces, was admitted on April 3 with a diagnosis of active rickets with bony deformities. She had been breast fed for 12 months and had since been on a baby soft diet. She had received orange juice occasionally and had never been given antirachitic supplements. At fourteen months her mother had noticed that she did not



FIG 6 (Case 6) P R. A = April 3 advanced chronic rickets. B = April 9 no change. C = May 7 slight healing after 27 days on yeast milk. D = May 29 further healing after 49 days.

creep or try to walk as had her other children. Physical examination showed a well nourished infant with prominent frontal bones, flaring thorax, rachitic rosary, Harrison's groove and enlargement of the epiphyseal ends of the long bones. During the preliminary period on the ward diet the case showed no healing. On April 10 yeast milk was substituted. Data for this case are summarized in table 3.

## DISCUSSION

Six hospitalized cases of definite active rickets showed healing within four weeks when fed 26 to 32 ounces of vitamin D milk daily, irrespective of whether it was irradiated milk of 50 units or yeast-fed cows' milk of 60 to 65 units per quart. The cases included two Negroes, two Italians, one Greek and one American, and two of the group were premature infants. From examination of the serum CaxP products, and from the roentgenograms, there is no obvious difference in the clinical antirachitic value of the two types of milk, as shown by the cases reported.

In attempting to compare further the relative effects of human infant consumption of the two types of vitamin D milk employed in this study, it seemed useful to plot against time for each case studied, the product of the serum Ca and serum P. The result is displayed in fig 7. All cases showed a CaxP product of less than 40 when the vitamin milk was first administered. The progressive increase of this product throughout the duration of the test is indicated. The general trend of the curves is substantially the same for each group. If the rate of increase of the serum CaxP product is an index of the rate of recovery from rickets, there is

nothing to choose between the rates of recovery on the two kinds of milk used.

A comparison of similarly plotted values of

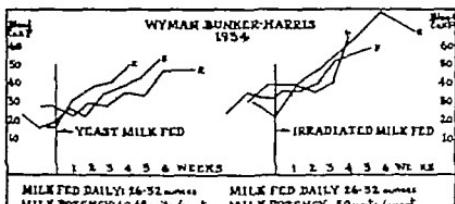


FIG. 7

serum CaxP from the Kramer and Gittleman<sup>2</sup> study of infants on the two kinds of vitamin D milk, of approximately the same potency as

It is the opinion of one of us (E T W) that the initial response of the rachitic infants to the administration of vitamin D milk in the present study is slower than that of similar infants in a previous study<sup>3</sup> where yeast milk of a higher potency was given. If serum CaxP values are truly an index of the healing process in recovery from rickets, then the above observation should be supported by the plot of these values for the earlier test (fig 9) when compared with a similar plot for the present study (fig 7). Such comparison fails to indicate to us the expected difference in the general slope of the curves. However, it is realized that since the number of cases is much too small to permit of calculating the probable error, it is impossible to give proper weight to a single curve which departs from the apparent mean (cf

TABLE 3  
SUMMARY OF CLINICAL CASES  
(Yeast Milk)

Case	Date 1934	Weight lbs.-oz.	Milk oz./day	Calories per lb.	Serum (mg %) Ca P	CaxP Product	Roentgenograms
No. 4	3/5	10 14	28	64.0	11.0 2.1	23.10	Advanced active rickets
J S	3/12	10 13	26	70.4	9.0 1.8	16.20	No change
Age	3/17	11 1	26	68.3	7.5 2.6	19.50	No change
8 mos	3/19	11 2	26	68.0	Yeast milk started		No change
	3/23	10 13	26	67.7	9.8 2.8	27.44	No change
	3/30	10 10	26	68.0	9.3 2.4	22.32	Healing rickets
	4/6	10 12	26	67.3	9.9 3.4	33.66	Further healing
	4/13	10 14	26	66.8	9.5 4.0	38.00	Further healing
	4/21	10 13	26	67.7	10.1 4.2	42.84	Further healing
	4/28	10 13	26	67.7		5.3	Further healing
No. 5	8/15	11 5	17	47.9	8.3 1.9	15.58	Advanced active rickets
L. Z	3/19	11 14	17	48.3	Yeast milk started		No change
Age	3/26	12 3	26	53.0	10.1 3.0	30.30	No change
9 mos	4/4	12 8	26	51.0	11.8 3.2	37.76	Slight healing
	4/10	12 14	23	54.0	11.1 3.6	39.96	Further healing
	4/16	13 10	28	51.0	10.5 4.7	49.35	Further healing
No. 6	4/4	18 2	32	42.5	10.9 2.5	27.35	Advanced chronic rickets
P. R.	4/9	18 3	32	42.5	11.0 2.5	27.60	No change
Age	4/10	18 2	33		Yeast milk started		No change
23 mos	4/16	18 3	32	44.3	9.8 2.3	21.56	No change
	4/23				10.3 2.9	29.53	No change
	4/30	18 12	28	42.6	9.9 2.8	27.72	No change
	5/7	18 9	28	43.0	10.4 3.4	35.36	Slight healing
	5/14	18 15	28	43.5	10.4 3.2	33.33	Further healing
	5/22	18 15	28	42.5	11.0 4.3	47.30	Further healing
	5/28	19 2	28	41.8	10.1 4.7	47.47	Further healing

used by us, supports the same conclusion, the trend of the curves (fig 8) being substantially

case D E, Fig 9 and case J B, Fig 8) It is quite possible that a sufficiently large number of records of serum Ca and P determinations would permit a more definite evaluation of such findings

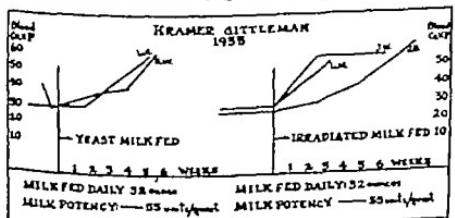


FIG. 8.

the same in both of their groups and in each of ours.

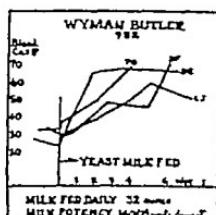


FIG. 9.

It seems fair to conclude, however, that with a small number of cases, and especially in a single case, the product of serum calcium and serum phosphorus, as ordinarily determined, cannot be regarded as a reliable quantitative expression of either speed or degree of healing. For the present, such evidence should be regarded as merely contributory to a complete diagnosis.

It may not be amiss in this connection to refer to the experimental work of Robison and Soames<sup>8</sup> on the calcification of split bones from rachitic rats in solutions containing salts of calcium and phosphorus. These authors found that when the menstruum contained Ca and P ions in proper proportions to give a product of about 40 (the calcium being in concentration of about 10 mg per cent), some calcification from inorganic salts could be obtained in the rachitic metaphyses, but that traces of organic phosphoric esters greatly enhanced the calcification and even permitted it to take place at lower CaxP values. It is interesting that the CaxP product required for calcification in rachitic bones in these experiments *in vitro* should so closely approximate the value expected in the human serum if bone calcification is to take place. This work suggests also the possibility that determination of organic rather than inorganic phosphorus, which the present method<sup>8</sup> gives, might constitute an improvement in this diagnostic procedure. The question can be settled only by the accumulation of sufficient data from parallel determinations of both forms of

phosphorus in the serum of rachitic and non-rachitic infants.

#### SUMMARY

Six infants with active rickets were fed 26 to 32 ounces of either irradiated milk (50 Steenbock Units per quart) or yeast-fed cows' milk (60 to 65 Steenbock Units per quart) during the early spring of 1934. All showed rachitic healing.

There was no indication of any difference between the two milks, unit for unit, in respect to their clinical antirachitic effectiveness.

Dr Allan M. Butler directed the calcium and phosphorus determinations for the study and Dr E. C. Vogt cooperated in taking the many roentgenograms and gave advice in their interpretation.

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#### LESS LEAD PERMITTED ON APPLES AND PEARS

In a notice addressed to both consumers and producers of apples and pears, Secretary of Agriculture Wallace has announced a further restriction in the quantity of lead residue permitted on these fruits in interstate commerce. The tolerance specified for the crops of 1935 is 0.018 grain of lead to a pound of fruit. The reduction was made despite requests from some quarters that the restrictions be relaxed, the Secretary adding that "expectation of continued progress downward is fully justified" and "relaxation in the lead restriction would be wholly incompatible with public safety."

The Food and Drug Administration will proceed against violators of the restrictions. Other spray residues for which tolerances are enforced are those containing arsenic or fluorine. The fruit industry, Secretary Wallace says, has demonstrated its ability to reduce the arsenic content to the world tolerance of 0.01 grain of arsenic trioxide to a pound of fruit. The official notice continues this tolerance for 1935. The fluorine tolerance also remains at this same point (0.01 grain to a pound of fruit). The reduction on lead is from 0.019 to 0.018.

The Department of Agriculture is continuing its

efforts to find a safe and effective substitute for poisonous spray materials, but lead arsenate is still considered essential to orchard management. The Food and Drugs Act imposes on the producer the obligation to reduce the residue to the lowest possible point.

In his official notice Secretary Wallace says, "Consumers are entitled to know that the restrictions imposed for many years against the shipment of fruit subjected to poisonous sprays have been so effective that unquestionably to-day most of the fruit offered the public is entirely safe." He adds further that since the effects of lead and arsenic are chronic rather than acute, the few instances in which interstate shipments of fruits with excess residue escape seizure by the Food and Drug Administration cannot be considered "significant health hazards."

Consumers who insist on being doubly sure are advised by the Department that it is unnecessary for them to use acid or alkali cleaning solutions such as apple and pear growers use to loosen residues for washing off. In the kitchen each individual fruit is usually washed anyway. Peeling or cutting out the stem and blossom ends, where the residue is most difficult to wash, is an added measure of safety—U. S. Department of Agriculture.

**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES**

EDITED BY RICHARD C CABOT, M.D.

CASE 21061

## PRESENTATION OF CASE

A thirty six year old American male office clerk entered complaining of weakness and edema.

Five months before entry he began to "lose his pep" and he consulted a physician who prescribed a tonic and a vacation. He spent two weeks in Maine and felt that he had gained strength. About four months before entry he noticed that his ankles had become swollen during the day and returned to normal when he awoke in the morning. He also noticed increasing shortness of breath especially upon exertion, but no orthopnea. There was no pain or palpitation. A month later he began to have diarrhea—four or five loose, watery occasionally clay-colored stools a day. There was no blood or mucus. A physician prescribed some pills which reduced the number of movements to two or three a day but the character remained unchanged. After about two weeks they became essentially normal. Two months before admission his ankles continued to be swollen even after a night's rest. His urine was again examined by his physician and this time a question of kidney disease was raised. He was put on a milk and cracker diet for three days and then the diarrhea returned. His urine was again examined and declared negative. Three weeks before admission he noticed fullness in his abdomen after eating only one third of the usual amount. His diarrhea recurred but there was no nausea or vomiting. He stopped working for the first time in about fifteen years because of the marked edema of his legs, and weakness. Four days before admission jaundice developed without chills or fever. The jaundice gradually increased in amount.

At the age of four he had pneumonia with pleurisy following which he had an infection in his left hip which was incised and which drained for about one year. At the age of eight, twenty eight years ago, he noticed a lump on a right rib which grew larger during the following year, reaching the size of a fist. Three ribs were removed with the tumor at a first class hospital and the diagnosis of fibrosarcoma was made. Since then many hard and soft lumps of varying size appeared on his head and other parts

of his body. Several of these were removed and diagnosed as wens. His right chest gradually grew larger and became deformed. He had been able, however to work as a clerk for about twenty years.

His father died in a sanatorium at the age of thirty six of pulmonary tuberculosis. His mother died at the age of thirty four from carcinoma of the rectum. One brother died at birth. A sister aged thirty seven was living and well. The females in the family and their offspring for three generations back were afflicted with lumps similar to the patient's. His grandmother died of carcinoma.

His marital history is non-contributory.

Physical examination showed a very emaciated markedly deformed man with a skeleton of unusual asymmetry. This was most marked in the thoracic region where an extreme right dorsal scoliosis was evident which made the right half of the chest appear approximately four times as large as the left. On further examination many other points of asymmetry became evident the calvarium was markedly irregular with bony prominences over the left parietal and right occipital regions, hard, bony masses about 1.5 centimeters in diameter projected from each angle of the mandible, and the mandible itself seemed larger on the left than on the right. The nose moreover, was distinctly more prominent on the left side and the septum was deviated to the left. The left hip was almost completely ankylosed and large irregular bony excrescences could be felt about the joint. Along the posterior aspects of the lower third of the right fibula two irregular projections of the bone could be felt, each about one centimeter in size. The thigh muscles of the left leg were distinctly atrophic in comparison with those on the right. Over the left hip was an old operative scar with a deep indentation suggesting a drainage wound. A second marginal incision was present on the postero-lateral aspect of the right chest beneath which portions of three ribs were absent.

Scattered irregularly over the entire body scalp, face, trunk and extremities were about 30 subcutaneous tumor masses varying from 3 millimeters to 3 centimeters in diameter. The smaller of these were firm the larger frequently fluctuant. The skin was in some instances freely movable over the masses, in other instances was adherent to them. Over a few of the masses it appeared reddened but over the majority it was unchanged in color.

The skin over the entire body seemed atrophic and slightly more transparent than normal. It was uniformly slightly but definitely yellowish in tint and the sclerae showed definite jaundice. Over the lower right thorax and upper abdomen above the umbilicus numerous dilated cutaneous veins were apparent. A cluster of firm discrete

cervical glands was felt below the left mandible

The right pupil was greater than the left, but the reflexes were normal. Several punctate pigmented areas were noted in the fundi. The chest organs were markedly displaced by the scoliotic deformity but the heart seemed to be of normal size. Its sounds were of good quality, the rhythm was regular and the rate 110. The blood pressure was 112/70. A few fine crepitant râles were heard at the right base but the lungs were otherwise clear. On the right continuous dullness extended from the level of the fourth rib to a point 4 centimeters below the costal margin where the liver edge could be definitely felt. The abdomen was distended and tympanitic throughout. A long slender mass about 12 by 4 centimeters, feeling very much like a banana, extended horizontally across the abdomen at the level of the umbilicus. It was freely movable and non-tender. The scrotum was edematous. Rectal examination showed a ring of external hemorrhoids, and many others could be felt within the ring, which bled easily on palpation. There was gross pitting edema extending halfway up each leg.

The temperature was 102°, the pulse 120. The respirations were 26.

Examination of the urine showed a specific gravity of 1.020 to 1.022, a slight trace of albumin and a positive test for bile. The blood showed a red cell count of 3,330,000, with a hemoglobin of 55 per cent. There was a white cell count of 28,200, 90 per cent polymorphonuclears. A smear showed approximately 7 per cent myelocytes and 4 or 5 stippled red cells in about 15 high power fields. No parasites were seen. The platelets were normal. The stools were soft, clay-colored and although no blood could be seen grossly, all specimens showed a 4 plus guaiac test. A Hinton test was negative, the icteric index 50, the van den Bergh 13.87 milligrams per 100 cubic centimeters direct. The serum protein was 4.8 per cent. The liver function test showed 50 per cent retention. The serum calcium was 8.13 milligrams, the phosphorus 3.60, the cholesterol 155.

He ran a septic chart, his temperature rising to 103° and falling to 99 or 100°. His white blood cell count remained about 35,000 and his red cell count about 3,500,000. He gradually failed and died two weeks after admission.

#### DIFFERENTIAL DIAGNOSIS

DR LELAND S. MCKITTRICK. It certainly would seem that this story of a boy of eight, with a tumor of the ribs followed by multiple nodules, going on for a period of years, with an increasing deformity of his chest and then the development of weakness, edema, shortness of breath, then diarrhea, jaundice and temperature, finally death, should be a perfectly clear-cut clinical picture if we could properly put it

together. It seems so sharply characterized that I cannot help feeling that it should be easy, but the more I think about it the more confused I become.

The past and family history are exceedingly interesting. The tumor of the right chest wall was diagnosed as fibrosarcoma twenty years ago. I believe I am right in presuming that the evaluation of cellular structures of tumors was not so highly refined then as now. Fibrosarcoma, as I know it, is largely a tumor of adult life and may be difficult to eradicate locally because of the marked tendency to recur, it metastasizes rarely, if at all, to regional nodes, occasionally to lungs or liver, and within a period of three to five years of operation, rather than after a longer interim. It would, therefore, seem unlikely that this so-called fibrosarcoma of twenty-eight years ago had anything to do with the symptoms for which he comes to the hospital at this time.

He apparently had two kinds of palpable tumors—(1) definitely in relation to the skin, some of which had been removed and diagnosed as wens, and probably were—(2) the other obviously in relation to the skeleton, involving the bones of the skull as well as the long bones. These have apparently been present since childhood. It is extremely interesting to note the presence of multiple tumors similar to those of the patient for three generations back. These tumors undoubtedly fall into a rather rare group of familial osteochondroma which, so far as I know, are benign, may be accompanied by marked deformity and might possibly be the etiological factor in the asymmetry which this patient presents, this would be additional evidence toward the contention that the present illness is a condition superimposed on the other and not the direct result of it. It is likewise difficult to connect the family history of tuberculosis with the patient's present illness.

It seems reasonable then to attempt to arrive at a more definite diagnosis by starting with his more recent symptoms and trying to evaluate a rather obscure, indefinite history superimposed upon a most unusual background. In brief, the story is one of weakness, edema of the ankles, shortness of breath, then diarrhea without blood, persistence and increase of the edema, a little fullness in the abdomen, then finally jaundice, the outstanding symptom apparently being the weakness and increasing edema. He comes to the hospital distinctly jaundiced, and has a banana-shaped, non-tender abdominal mass lying horizontally. He has a temperature of 102°, and a rather interesting smear, 90 per cent polynuclears, and 7 per cent myelocytes. Except for the abdominal mass, and an asymmetry of the pupils, and the deformity already discussed, he apparently has a definitely enlarged liver, a distended tympanic abdomen, and marked edema of the scrotum and lower leg.

He also has some dilated superficial veins in the upper abdomen and lower right chest and some hemorrhoids which bled easily on palpation He has a definite secondary anemia and a leukocytosis He has a 4 plus guaiac in all of the stool specimens examined but no gross blood Icteric index and van den Bergh are in keeping with his clinical jaundice Serum calcium phosphorus, and cholesterol give no helpful information A serum protein of 4.8 per cent is low below a level at which edema is expected to occur and undoubtedly a factor in the amount of the edema present I should doubt very much that this alone would account for edema of such long standing and so marked below the level of the umbilicus and not elsewhere.

I cannot make a diagnosis from the above summary of positive findings Hodgkin's disease at times, particularly in the later stages, may give fever, leukocytosis, a high polynuclear count, with an increased number of cells somewhat comparable to myelocytes The only other evidence suggestive at all of Hodgkin's is the massive glands in his neck, and I should be quite willing to exclude this as a probable diagnosis One would like to interpret the abdominal mass as a distended gall bladder I have never seen a gall bladder occupy a transverse position in the abdomen, however While the presence of progressive, painless jaundice with a non tender distended gall bladder would be strong evidence in favor of a malignant obstruction in relation to the ampulla I am not able to interpret the mass as gall bladder much as I would like to

While metastatic cancer of the liver may give a leukocytosis and a temperature up to 102°, there is nothing from the physical examination to suggest that the liver enlargement is due to metastatic disease It would seem reasonable then to attempt to explain the edema and jaundice by a single process This could then be explained by an infiltrating lesion obstructing the portal system, with resultant obstruction, not only of the common hepatic duct but of the portal vein and possibly the inferior vena cava I should presume that this was most likely due to metastatic cancer, the origin of which I cannot say I would therefore, suggest as a diagnosis cancer primary source undetermined, with metastases involving the caput of Glisson, possibly the retroperitoneal structures with pressure on the inferior vena cava.

#### CLINICAL DISCUSSION

DR. TEACY B. MALLORY This is obviously one of the most baffling cases we have had in the hospital for a number of years and the field is still wide open for suggestions.

DR. McKITTRICK It will not hurt my feelings for anyone to make a diagnosis, Dr Mallory

DR. MALLORY Dr Talbott, you saw this patient on the ward Will you tell us what you thought about him?

DR. JOHN H. TALBOTT The patient was a most unusual one as far as his history is concerned, and presented a most puzzling physical examination There were two or three points that I was interested in One was the hereditary factor as far as the nodules were concerned This patient had had at least three immediate relatives who had these exostoses We know that hereditary exostoses are present in the majority of the members of affected families, and males are affected three to one In this instance it was the females, although we could not be certain of the history

The scoliosis was another thing that interested me I have never seen any more marked scoliosis than this patient had It was a debatable point as to whether the removal of three ribs many years ago was responsible for producing a functional scoliosis, and I felt that at some time or other there was primary bone disturbance When we come down to the serum calcium of 8.13 with a phosphorus of 3.6 I do not think that any emphasis can be placed on those figures He had a serum protein of 4.8 and that will give you a calcium consistent with 8.1 On the ward there was little evidence of a disturbance of the phosphorus or calcium metabolism

I have seen two cases of diffuse carcinomatosis in the absence of any obvious infection that had a persisting high white count, as this was, of 28,000 and 35,000

Then the question arose as to whether these hereditary exostoses had become malignant Ehrenfried has, I believe, the best series of cases and has gone over them very thoroughly He made a survey of 500 cases in which about 5 per cent had become malignant I think it is entirely possible that this patient had hereditary exostoses, and that at some time or other one had become malignant He had an obvious malignancy in addition to the exostoses.

DR. RICHARD H. MILLER Are you assuming that this family all had exostoses?

DR. TALBOTT I am If he had exostoses in the head of the femur, where they frequently occur, and he had a history of tuberculosis, it is likely that he had a tuberculous hip that was aggravated by the exostosis that was already present The fact that he did not have the typical bowing of the extremities that one sees in the congenital cases I do not believe is against the diagnosis that I have presented

DR. G. W. HOLMES Is the statement that Dr Talbott has just quoted from Dr Ehrenfried a generally accepted thing, that this type of exostoses may become malignant?

DR. MALLORY I believe so, Dr Holmes It is uncommon, but it certainly does happen

sions appear to have been demonstrated in connection with this

The present illness appears to be definitely established three weeks before entry and four weeks before death. Headache is the earliest and most significant symptom, and its severity may well be judged by the fact that it was not relieved by codein. Stiffness of the neck together with an irrational mental status, occurring two weeks after the onset of headache, are consistent with the onset of some form of increased intracranial pressure and probably meningitis. The spinal fluid examination, carried out previous to entry and repeated by us, conclusively shows meningitis of a subacute or chronic type. The fluid is not that of an acute septic process caused by pyogenic organisms, nor is it compatible with the aseptic type of meningitis, in that the low sugar and chloride findings are those seen in bacterial meningitis. By the time she reaches our hospital, therefore, the clinical picture is one of meningitis. The spinal fluid picture corroborates this and suggests that it is a subacute type of meningitis and this is also borne out by a slight rise in temperature. In spite of the fact that tubercle bacilli were not demonstrated, one can hardly hesitate in making a diagnosis of tuberculous meningitis. It is unfortunate that the x-ray film of the lungs was unsatisfactory, however, it not infrequently happens that tuberculosis is present in the lungs as a miliary tuberculosis, and is not demonstrable at the time the films are taken. It is unusual in tuberculous meningitis not to have cranial nerve palsies, particularly with reference to the oculomotors, but the absence of cranial nerve symptoms and signs should not prevent us from making this diagnosis.

#### CLINICAL DIAGNOSIS

Tuberculous meningitis

#### DR JAMES B AYER'S DIAGNOSIS

Tuberculous meningitis. No foci of infection demonstrated.

#### ANATOMIC DIAGNOSES

Tuberculous meningitis

Acute miliary tuberculosis

Chronic tuberculous adenitis of the bronchial glands

Tuberculous salpingitis

Tuberculous peritonitis

#### PATHOLOGIC DISCUSSION

DR TRACY B MALLORY: Dr Ayer was quite correct in his diagnosis of tuberculous meningitis. Since this can never be the primary focus of the tuberculosis in the body he naturally looked for evidence of an older lesion elsewhere, but the record was too scant to give him any significant leads. In retrospect, it is probable that the menstrual abnormalities were actually an indication of what he was looking for, but since they were not backed up with the demonstration of definite pathology by pelvic examination they were entirely inadequate for any diagnosis. She did have a bilateral tuberculous salpingitis and also a tuberculous endometritis. One often wonders how long lesions of this type may have existed before they are discovered at operation or autopsy. In this case I think we can confidently assume that they were of less than seventeen and in fact probably less than eight months' duration. This condition is so uniformly connected with sterility that its development must be subsequent to conception and probably to the pregnancy. It would be very interesting to know what the endometrium showed at the curettage done five weeks before entry to the hospital. It seems very probable that tubercles might have been found in it at that time. The salpingitis, however, was not the origin of the tuberculous process, which proved to be a very chronic tuberculous adenitis of bronchial glands. As terminal events acute miliary tuberculosis and tuberculous peritonitis accompanied the meningitis. Naturally, if the patient had reached the hospital at an earlier stage in her illness instead of in incipient coma, the chances of demonstrating these other lesions would have been very much greater.

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## THE GENE

THE search for the gene, the living structural unit which governs heredity has just been carried a long step forward by biologists working in two different American institutions. Hitherto the gene has been invisible because of its minute size, and has resembled the atom in that it was known by its effects alone. Within the past year, however, discoveries have been made which render visible the location of the genes within the chromosomes and which promise to reveal the genes themselves for visual study. These discoveries were revealed at the recent meetings of the Genetics Society of America by Professor T. S. Painter of the University of Texas and by Dr. O. B. Bridges of the California Institute of Technology, the men responsible for this latest advance in genetics.

While the chromosomes are usually so small that it is not possible to make out any internal detail, it has been found that in the salivary

glands of the fruit fly, *Drosophila*, the cells possess enormous chromosomes, hundreds of times bulkier than those in the other cells of the body. These chromosomes are so large that it is easily seen that they are composed of darkly staining disks, rings, or beads of various shapes and sizes alternating with colorless bands, the exact pattern being the same in corresponding chromosomes from cell to cell or fly to fly. By treatment with x-rays, it is possible to break pieces off the chromosomes and thus to produce various changes in the appearance of the flies. By breeding tests, the geneticist can tell the position of the break with reference to the genes of the affected chromosome and the cytologist is able to study the giant chromosomes in the salivary glands and see where the break is located with regard to the visible pattern of the chromosome. In this way Painter and Bridges and their coworkers have been able to locate various genes in or near certain chromosomal bands of characteristic appearance. The work has advanced so far that it is already possible to map the position of a considerable number of the genes most frequently used in genetic studies.

At present it is perhaps too early to evaluate the whole significance of this discovery. These giant chromosomes with their visible bands are known so far only in the flies, fortunately, however the fruit fly is the best known genetically of all animals and so is an ideal form for the preliminary working out of this new field. Whether it will be possible to extend this method to the study of mammalian or human genetics cannot be guessed yet. It should be noted also that none of the investigators claim to have actually seen the gene despite newspaper report to that effect. The number of genes is probably far larger than the number of visible bands, so that the larger bands must represent several or many genes. The most that can be said at present is that the dark bands apparently indicate the position of the genes on the chromosomes whether they are actually the genes themselves can only be decided after further study. In any case this new discovery is of extreme importance to the geneticist, ranking in value with the discovery that it is possible to produce mutations by means of x-rays.

## VINYL ETHER

VINYL ether or vinyl oxide has recently been introduced as an inhalation anesthetic and will probably be on the open market under the name Vimethene before long. Before this product had been made, before it even existed except in theory, prediction was made by Leake,

from its chemical structure, that it would make a good anesthetic. It has been investigated experimentally rather thoroughly, chiefly by a group at the University of Pennsylvania, and has been used clinically in several thousand cases by a number of different clinicians.

It has been found experimentally to have very little toxic action with the exception of its action on the liver. Respiration is depressed well before circulation, as with the commonly used ethyl ether, so that at cessation of respiration the heart is still beating strongly. There is ample margin between the anesthetic and the lethal concentrations, the ratio between the two being about 1 to 2½. However, its action is so rapid and powerful that the patient may be precipitated into the fourth stage of anesthesia much more readily than with ethyl ether, and if he is so precipitated too deeply, resuscitation may be difficult. It is inflammable and forms, as does the other ether, highly explosive mixtures with the correct proportions of air, nitrous oxide, or oxygen. It has not proved a very good anesthetic for dogs, as it produces some mucus and muscular excitement. Pathological examination of the various organs of the body has failed to show any tissue changes with the exception of the liver. Here there was definite necrosis in dogs when the anesthesia was maintained for over two hours. Such necrosis did not occur in monkeys. In liver function tests both on dogs and on human beings, Bourne found little evidence of damage except where anoxemia was present, and recommends its use in obstetrics. From these pieces of experimental work it appears that, while it is quite possible to produce serious liver damage (this has, in fact, occurred clinically), under conditions favorable for its development, such as prolonged and deep anesthesia, anoxemia or deficiency of glycogen, yet if these factors are avoided the effect on the liver is no more than with ethyl ether.

Clinical trial has shown considerable diversity of results. Some observers have reported very satisfactory results, while others have found a high incidence of various unpleasant phenomena, such as excessive mucus, muscular excitement, crowing respiration with obstruction, and cyanosis. This diversity of experience may be due in part to differences in administration, since most of the poor results have been reported by those having a comparatively small experience with its use. Some of the poor results in its early use may also have been due to impurities in the drug, since, unless it is properly stabilized, it decomposes rather easily with the formation of such irritating products as formaldehyde and formic acid. The manufacturers state, however, that at the present time the drug is exceptionally pure and so well stabilized that any trouble from this source has been eliminated. Induction and recovery are very rapid, the former

taking one and one-half to three minutes and the latter one-half to five minutes. Abdominal relaxation is good. It may be administered in various ways like ordinary ethyl ether, by an open method on an ordinary mask, by a closed method in a gas machine, or as an adjuvant to one of the gases, but, because of its rapid evaporation, it is preferably used by some closed method.

On the whole, it appears probable that in vinyl ether we have a valuable addition to our list of anesthetic agents. While it is not a good anesthetic for deep and prolonged anesthesias (roughly an hour) it appears very suitable where an anesthesia is wanted for a rapid induction and recovery and good relaxation.

#### QUESTIONABLE PUBLICITY

THERE is a common belief pervading the medical profession that doctors should exercise discretion in expressing disapproval of work done by their colleagues. Boston surgeons have, on two recent occasions, been the object of rather severe criticisms. The latest occasion was the statement reported to have been made before the Johns Hopkins University Supper Club, when an eminent physician of Boston is reported to have said, "There are an enormous number of surgical operations that ought never to have been done." *Enormous* means very many when used in this way. Very properly a surgeon in this meeting contended that, since the alleged conditions were emphasized by a Boston doctor, the criticisms must apply to Boston surgeons because he was confident that such practices were not frequent everywhere.

We hope that our Boston friend was not correctly quoted, but if he was, a definite lesson should be learned, first, that general statements affecting the ethics of an honorable group of practitioners should not be made, and secondly, if the author of these remarks has evidence to substantiate his beliefs, he should make specific charges to the American College of Surgeons, the Boston Surgical Society, the New England Surgical Society, or even, in an aggravated case, to the Board of Registration in Medicine.

It would be in order, we believe, for the Massachusetts Medical Society to ask the gentleman to give the names of any of its members who may be guilty of unethical practices, if he is able to do so. If this is merely loose talk, the doctor should at least be urged to be more careful in his utterances, not so much as a courtesy to his professional brethren, but especially to avoid creating prejudice among the laity. Some non professional people are already disturbed and have raised the question as to the behavior of surgeons. We expect such accusations at legislative hearings, but not at a gathering of medical men open to reporters.

## THE DEATH OF DR. THOMAS J O'BRIEN

Notice of the death of Dr Thomas J O'Brien, Executive Assistant to the President of the Massachusetts Medical Society has reached this office as we go to press An extended notice will appear in the next issue.

## THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MUNRO DONALD A.B., M.D. Harvard University Medical School 1916 F.A.C.S Visiting Surgeon in charge of Neurosurgery Boston City Hospital Assistant Professor of Neurological Surgery, Harvard Medical School Address Boston City Hospital, Boston Mass Associated with him is

HAHN JOSEPH. M.D. Tufts College Medical School 1931 Assistant in Neurology, Harvard University Medical School and Tufts College Medical School. Formerly Resident in Neurosurgery, Boston City Hospital Now, Resident in Neurology, Boston City Hospital Address Boston City Hospital, Boston, Mass Their subject is "Tidal Drainage of the Urinary Bladder" Page 229

TRUESDALE, PHILEMON E. M.D. Harvard University Medical School, 1898 F.A.C.S Surgeon Truesdale Hospital, Fall River, Mass. His subject is "Diaphragmatic Hernia at the Esophageal Hiatus The Short Esophagus and Thoracic Stomach" Page 240 Address 151 Rock Street, Fall River, Mass

ALBRIGHT FULLER, A.B., M.D. Harvard University Medical School 1924 Instructor in Medicine, Harvard Medical School Assistant Physician, Massachusetts General Hospital Address Massachusetts General Hospital Boston Mass. Associated with him is

HALSTED, JAMES A. A.B., M.D. Harvard University Medical School 1930 Assistant in Medicine, Massachusetts General Hospital. Address 264 Beacon Street, Boston Mass. Their subject is "Studies on Ovarian Dysfunction" Page 250

WYMAN, EDWIN T. M.D. Tufts College Medical School 1911 Visiting Physician at the Children's Hospital, Boston and the Infants' Hospital, Boston. Consulting Pediatrician Norwood Hospital Norwood, Leominster Hospital, Leominster, Framingham Union Hospital, Framingham and Burbank Hospital, Fitchburg Instructor in Pediatrics Harvard University Medical School Address 319 Longwood Avenue Boston Mass Associated with him are

ELEY, R. CANNON M.D. University of Virginia, Department of Medicine, Charlottesville, 1925 Instructor in Department of Pediatrics and Communicable Diseases, Harvard Medical School Associate Visiting Physician at Children's Hospital Boston Address 319 Longwood Avenue, Boston, Mass And

BUNKER, JOHN W. M. A.B., A.M., Ph.D Professor of Physiology and Biochemistry, Massachusetts Institute of Technology Address Massachusetts Institute of Technology, Cambridge, Mass And

HARRIS, ROBERT S. S.B. Research Associate, Department of Biology, Massachusetts Institute of Technology Address Massachusetts Institute of Technology, Cambridge, Mass Their subject is "A Comparison of 'Yeast Milk' and Irradiated Milk in the Treatment of Infantile Rickets." Page 257

## The Massachusetts Medical Society

### SECTION OF OBSTETRICS AND GYNECOLOGY\*

THOMAS ALMY M.D., C J KICKNAM M.D.,  
Chairman Secretary  
140 Rock Street, 524 Commonwealth Avenue  
Fall River Mass. Boston Mass.

### WISDOM OF VAGINAL VS RECTAL EXAMINATION IN LABOR

In recent years there seems to have been a marked tendency on the part of medical men toward rectal examination of the parturient during labor. This is particularly true of men obstetrically trained, and is a definite improvement in the care of cases during labor. It was chiefly used to ascertain the advancement of the head in the pelvis and the progress of labor, but, in increasing experience has proved that it has a much wider field of usefulness.

Obviously it has eliminated one very important factor in the causation of puerperal sepsis. One does not need to employ all the technique that is used in examining a patient vaginally. It is sufficient to have the gloved finger well covered with lubricant so that there will not be produced an abrasion of the rectal mucosa on inserting the finger. The index finger of either hand is best suited to this procedure.

Examination can be conducted without pain because, during pregnancy and labor the sphincter and levator ani muscles are softer and more dilatable. The rectovaginal wall can be easily compressed and the outlines of the cervix together with its dilatation and the presenting part can be determined with comparative ease.

A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

In breech and face presentation the diagnosis is not so easy. Not infrequently it is possible, when the cervix is well thinned out, to diagnose the position of the fetus by feeling the cranial sutures or other landmarks on the presenting part. The extent of engagement can be determined because the spines of the ischia are felt without difficulty. Since the examination is practically painless and with a minimum of danger of infection, it can be done many times to determine the progress of labor.

Sometimes it is not possible to feel the presenting part by rectal examination, unless a slight amount of pressure is put on the presenting part just above the symphysis, or unless a little fundal pressure is used. Rectally one can decide about the presence of a prolapsed cord, a footling, tumors, rigid perinei and the spaciousness or not of the birth canal. Sometimes, however, in placenta previa it is necessary to examine vaginally. The majority of labors at the present time are conducted with rectal and abdominal examinations only. There are but a few men who still adhere to the vaginal method and who claim very little sepsis. Since rectal examination will furnish us with sufficient information about any given labor, with rare exceptions, and since it obviates one definite potential source of infection, it is a desirable procedure in the conduct of the average labor.

## MASSACHUSETTS LEGISLATIVE NOTES

### SCHEDULE OF HEARINGS

Thursday, February 7, at 10 30 A.M., In Room 450, State House, before the Committee on Public Health

H 528 provides for regulation of the practice of physicians and surgeons in certain cases

*Opposed by the Committee on State and National Legislation of the Massachusetts Medical Society*

Tuesday, February 19, at 10 30 A.M., in Room 450, State House, before the Committee on Public Health

H 60 requires the vaccination of children in private schools

*Approved by the Committee*

H 623 is a bill making vaccination voluntary

*Opposed by the Committee*

H 755 is a bill to prevent vaccination or inoculation with impure virus or serum and without consent

*Opposed by the Committee*

H 1059 This is designed to define the powers and duties of the Milk Control Board

S 229 A resolve for an investigation of the New England Milk Producers Association

S 213 This relates to the construction and equipment of additions to the Westfield State Sanatorium and for caring for residents of the four western counties suffering with pulmonary tuberculosis

H 1045 relates to expenditures for mosquito control in Cape Cod

H 1157 is designed to create a board of examination and registration of chiropractors

H 1175 is designed to abolish the Industrial Accident Board

H 1679 is designed to provide additions to the Middlesex County Sanatorium

H 1105 is an act requiring the payment of certain hospital bills as part of the settlement of claims for personal injuries or death

H 602 is an act preventing the discontinuance of compensation ex parte by a member of the industrial accident board except upon the report of a physician appointed by said board

H 601 is an act making parents of certain minors entitled to receive workmen's compensation payable on account of injuries resulting in the death of such minors

H 1288 is an act relative to payments under the workmen's compensation act during the period of total incapacity

H 454 is an act relative to the weekly payment of wages Hearing February 7 10 30 A.M., Room 427, State House.

H 455 is an act limiting the hours of labor of public employees and of women and certain minors to thirty hours per week.

H 633 is an act authorizing the town of West Springfield to appoint a town physician for certain purposes

H 603 is an act to prevent the discontinuance of payments under the workmen's compensation law on ex parte hearings Hearing February 7 10 30 A.M., Room 427, State House

S 124 is an act enlarging the original and concurrent jurisdiction of the Supreme Judicial and Superior Courts to include certain suits by hospitals to reach and apply certain assets

H 562 is an act relative to the educational qualifications of applicants for registration in Pharmacy

S 268 Petition of Dwight O'Hara that the Department of Labor and Industries be authorized to pay fees to physicians for certain medical reports to said department. Hearing February 7 10 30 A.M., Room 427, State House

H 521 Petition of Charles F. Hurley, Chairman of the State Board of Retirement, for legislation to regulate medical fees of physicians acting for said board in disability cases

H 758 Petition of Curtis M. Hilliard for investigation by a special commission (Commissioners of Public Health and Mental Diseases and others) of public health laws and practices within the Commonwealth

H 1157 Petition of Henry J. Kennedy for establishment of a board of examination and registration to regulate the practice of chiropractic

S. 308. Petition of Frank Hurley that provision be made for the establishment and maintenance in the western part of the Commonwealth of a hospital for the treatment of cancer and for the temporary relief and treatment of persons suffering from cancer

H. 581 is an act creating a Board of Commissioners to administer a motor vehicle insurance fund for providing compensation for injuries and deaths due to accidents caused by motor vehicles. This provides among other things that actions of contract or tort for malpractice, error or mistake against physicians, surgeons, dentists, optometrists hospitals and sanatoriums shall be commenced only within two years next after the cause of action accrues and actions for libel shall be commenced only within one year next after the cause of action accrues.

H. 1276 is an act prohibiting the handling of tort claims by doctors.

H. 715 is an act relative to death payments under the workmen's compensation law an amendment to chapter one-hundred and fifty-two of the General Laws which is as follows:

If the dependents of an injured employee who dies while receiving disability compensation hereunder file with the department within thirty days after his death a written request for the appointment of a medical arbitration committee to determine the question as to whether the death resulted from the injury for which compensation was being paid, the department shall thereupon establish such a committee which shall consist of a physician selected by the insurer a physician selected by the dependents of the deceased employee and a third physician selected by the department whose fee and expenses shall be allowed the same as those of an impartial physician under section nine and shall be paid in the same manner. The determination by said committee of the aforesaid question shall be binding upon the department and shall be embodied in the final decision rendered by the department or any of its members.

H. 675 is an act establishing the University of the Commonwealth of Massachusetts. The object is as follows. This university of the commonwealth of Massachusetts shall include and have full control over the state normal schools at Barnstable, Bridgewater Fitchburg Framingham, Lowell North Adams, Salem, Westfield and Worcester together with the Massachusetts school of art, the Massachusetts state college the Massachusetts nautical school the Bradford Durfee textile school at Fall River the Lowell Textile school the New Bedford textile school and the division of university extension.

### MISCELLANY

#### THE AWARD OF THE ORDER OF THE WHITE ROSE TO DR. WILLIAM P MURPHY

Dr William P Murphy was awarded the Order of the White Rose by the President of Finland with a rating of Commander of the First Rank, December

1934 made a member in December 1934 of the Kaiserlich Leopold-Carolin Deutsche Akademie der Naturforscher which was established in 1652 and is probably the oldest of our scientific societies.

#### HEALTH OFFICERS MONTHLY STATEMENT OF VENEREAL DISEASES REPORTED

TREASURY DEPARTMENT—PUBLIC HEALTH SERVICE

NOVEMBER, 1934

This statement is issued monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The following reports were received from State Health Officers. The figures are preliminary and subject to correction. It is hoped that this will stimulate more complete reporting of these diseases.

State	Syphilis		Gonorrhea	
	Cases Reported During Month	Monthly Case Rates per 10,000 Population	Cases Reported During Month	Monthly Case Rates per 10,000 Population
Alabama (a)	—	—	—	—
Arizona	23	.49	317	4.79
Arkansas (c)	369	1.97	331	1.23
California	1,362	2.25	1,873	2.36
Colorado (a)	—	—	—	—
Connecticut	260	1.58	172	1.04
Delaware	303	8.42	27	1.12
Dist. of Columbia	136	2.75	131	2.65
Florida	389	3.50	42	.27
Georgia	633	2.17	369	1.27
Idaho	0	0	0	0
Illinois	1,303	1.66	1,311	1.55
Indiana	231	.71	180	.55
Iowa (c)	105	.42	182	.73
Kansas	132	.69	81	.43
Kentucky	143	.54	273	1.03
Louisiana	187	.87	133	.62
Maine	43	.54	45	.56
Maryland	739	4.44	230	1.38
Massachusetts	390	.90	596	1.38
Michigan	625	1.04	489	.97
Minnesota	289	1.11	300	1.18
Mississippi (b)	—	—	—	—
Missouri	333	.91	190	.53
Montana (c)	61	1.13	87	.69
Nebraska	52	.37	86	.63
Nevada (a)	—	—	—	—
New Hampshire	19	.41	21	.45
New Jersey	650	1.31	261	.63
New Mexico (c)	48	1.11	43	.97
New York	5,067	3.91	1,559	1.20
North Carolina	1,334	3.77	361	1.07
North Dakota	14	.20	60	.87

many years he served on the staff of the Hale Hospital and the Gale Hospital.

Dr Durant joined the Massachusetts Medical Society in 1885, was also a Fellow of the American Medical Association, and was one of the group of 1000 surgeons at the inauguration of the American College of Surgeons. He was a member of the board of appeals during the World War and after the Massachusetts State Guard was organized, he was commissioned as captain, and later promoted to rank of major with assignment to the 16th Regiment, Infantry, as chief medical officer. After the 16th Regiment was disbanded, Dr Durant was transferred to the 11th Regiment with headquarters in Boston.

His civic interests were memberships on the school board and water board, having served as chairman for four years. Dr Durant was a Mason.

He is survived by his widow, Mrs Marion F. (Foster) Durant, two daughters, Mrs A. A. C. Malcolm and Mrs Mark Packard, Jr., and a grandson, all of Haverhill.

**FULLER** — DANIEL HUNT FULLER, M.D., a former member of the Massachusetts Medical Society, died in Philadelphia, February 1, 1935. He was assistant to the Executive Officer of the Massachusetts Department of Mental Diseases before moving to Philadelphia in 1914. He was recognized as a psychiatrist of standing and for the past ten years was Chairman of the American Psychiatric Society's Committee on Nursing.

Dr Fuller was chief of the clinic of mental and nervous diseases of the Pennsylvania Hospital.

**KNOWLES** — CHARLES AUGUSTUS KNOWLES, M.D., of 695 Adams Street, Dorchester, with an office at 520 Commonwealth Avenue, died at his home, January 31, 1935. He was a member of the visiting staffs of the Boston City, the Cambridge, and St. Elizabeth's Hospitals.

Dr Knowles was born in Boston in 1904, the son of the late William J. and Catherine C. Knowles. He was educated in the public schools and Tufts College and graduated from Tufts College Medical School in 1927. He served as house officer at the Boston City Hospital and joined the Massachusetts Medical Society in 1930.

He is survived by his widow, Mrs Agnes Fitzgerald Knowles, a daughter, Clare, and four brothers, William Knowles and Albert Knowles, both of Boston, Joseph Knowles of Stoughton and Edward Knowles of Fitchburg.

**DOBSON** — CLARENCE HENRY DOBSON, M.D., of 29 Williston Road, Brookline, Mass., died at his home, February 1, 1935, after a brief illness. He was born in Lynn in 1869, the son of John Martin and Joanna Short Dobson. After graduating from the Lynn public schools, he matriculated at the Hahnemann Medi-

cal College and Hospital of Philadelphia, graduating therefrom in 1897. He began practice in Ardmore, Pa., and later moved to Conway, Mass., and from there enlisted in the army in August, 1917. He served with Base Hospital No. 60 at Bazouilles, France. Returning to this country after the war, he settled in Brookline.

He joined the Massachusetts Medical Society in 1921, and was also a Fellow of the American Medical Association.

## NOTICES

### THE AMERICAN NEISSEIAN MEDICAL SOCIETY

January 30, 1935

The American Neisserian Medical Society was founded on June 12, 1934. It is dedicated to the promotion of knowledge in all that relates to the gonococcus and gonococcal infections, that there may be attained improvement in the management of gonorrhea and a reduction in its prevalence. There are 115 charter members and the officers are as follows:

Dr Edward L. Keyes, New York, Honorary President

#### Executive Committee

Dr J. Dillingham Barney, Boston, President,  
Dr P. S. Pelouze, Philadelphia, Vice-President,

Dr A. L. Clark, Oklahoma City,

Dr Walter Clarke, New York,

Dr R. D. Herrold, Chicago,

Dr N. A. Nelson, Boston,

Dr Oscar F. Cox, Jr., Boston, Secretary-Treasurer

The society plans to carry out the following program:

- A The scrutiny of the management of gonorrhea in both male and female
- B Clinical and laboratory research in the diagnosis, medical and social pathology, and the treatment of gonorrhea.
- C Dissemination among the medical profession and the public of authoritative information concerning gonorrhea.

Membership is limited to

- A Residents of the United States or its territories, Canada or Mexico
- B Graduates of a medical school recognized by the American Medical Association.
- C Those who are engaged in some phase of the management of gonorrhea.

Invitation to membership is extended to all qualified physicians who desire to work for improvement in the management of gonorrhea. Application blanks can be obtained from the undersigned.

Oscar F. Cox, Jr., M.D., Secretary  
475 Commonwealth Avenue,  
Boston, Mass.

**BOSTON UNIVERSITY SCHOOL OF MEDICINE  
SURGICAL CLINIC AT THE BOSTON CITY  
HOSPITAL**

Friday February 15 12-1 Cheever amphitheatre  
Dr William R. Morrison Associate Professor of  
Surgery will present

- 1 A case of obstructing duodenal ulcer
2. A case of acute pancreatitis associated with gall stones.
- 3 In addition certain surgical cases will be presented for discussion

Physicians and medical students are invited.

**CLINIC AT THE PETER BENT BRIGHAM  
HOSPITAL**

At 3:30 P.M. on Thursday February 14 in the Amphitheatre of the Peter Bent Brigham Hospital, Dr Henry A. Christian Physician in-Chief Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic. To it are cordially invited practitioners and medical students. These clinics will be repeated on Thursdays until May.

On Saturdays in the wards of the Peter Bent Brigham Hospital from 10 to 12 staff rounds will be conducted by Dr Christian. These are open to all physicians.

**REMOVAL**

WALTER O. BLANCHARD M.D. announces the removal of his office to 465 Centre Street, Newton Massachusetts.

**REPORT AND NOTICES  
OF MEETINGS****NEW ENGLAND OPHTHALMOLOGICAL  
SOCIETY**

The New England Ophthalmological Society met Tuesday evening January 15 at the Massachusetts Eye and Ear Infirmary. The meeting was called to order by Dr Hugo Riener.

The first business was the election of officers which resulted as follows: President, Dr James Regan Vice-President, Dr Edwin A. Goodall Secretary Treasurer, Dr Benjamin Sachs Recording Secretary Dr Trygve Gunderzen. Dr Regan then took charge of the meeting.

Dr Rowland presented a twelve year old boy who apparently had been unable to rotate the eyes laterally since birth. The boy was undersized and underdeveloped for his age, due probably to underactivity of the anterior pituitary. The case was discussed by the guest of the evening Professor Bielschowsky who demonstrated partial paralysis of the external recti which were very weak. In his opinion this was a case of congenital defects of the external recti probably with inelastic fibrous bands. Here there was no pathological convergence as would be expected in acquired bilateral sixth nerve paralysis.

Dr Casten presented a twenty-eight year old woman who six months ago had a sudden onset of diplopia within 24 hours following childbirth. The diplopia was homonymous for distance and crossed for near. Discussion was concerning the differential diagnosis of convergent spasm and divergent paralysis with opinion favoring the former.

Dr Alexander Marble discussed the studies of blood fat in two cases of Lipemia Retinalis. Both cases were in young boys entering the hospital in diabetic coma, markedly acidotic. The blood fat values were markedly elevated, seven and one-half per cent in one case and fourteen per cent in the other the normal value being seven-tenths per cent. The blood cholesterol was also elevated in each case. Under active treatment the blood fats returned to normal about five per cent disappeared in the first twelve hours, the fat presumably being stored in the body. Lipemia Retinalis is a relatively uncommon condition occurring usually in young males in acidosis from uncontrolled diabetes where the blood fats exceed three per cent.

Professor Bielschowsky presented a paper "Congenital and Acquired Anomalies in Fusion." Factors in deficiency of fusion may be disturbances in either the sensory or motor apparatus. There is a small group of patients with diplopia due to a slight squint who have a condition known as "horror fusion". In this condition the correcting prism does not give single vision but merely transfers the diplopia from crossed to uncrossed or vice versa.

Professor Bielschowsky presented at some length a patient who apparently had this condition. This was a twenty-five year old man who developed a convergent strabismus following a blow on the head when a child. At the age of fourteen he was operated upon to correct the squint and was given glasses. One year ago the patient suddenly developed diplopia with headache and loss of weight. Several operations on the extra-ocular muscles were performed without relief, and all attempts to correct the diplopia by refraction and prisms were in effective. It was then discovered that the patient had anisocoria. Fusion could only be maintained for short periods of time and with the head held in a very abnormal position. By using many consecutive anisocoric corrections the head was gradually brought down to the primary position while still retaining fusion. With the use of anisocoric lenses the patient now has fusion and depth perception.

**ROBERT BRECK BRIGHAM HOSPITAL****CLINICAL MEETING**

There will be a clinical meeting on "Chronic Arthritis" at the Robert Breck Brigham Hospital 15 Parker Hill Avenue, on Wednesday evening February 20 at 8 o'clock. There will be case presentations and discussions by the Staff Physicians and medical students are cordially invited.

JOHN G. KUHN, M.D.,  
Secretary to Staff

## MASSACHUSETTS MEMORIAL HOSPITALS

There will be a meeting of the Surgical Section in the Ladies' Aid Room (former nurses' dining room), Talbot Memorial, 82 East Concord Street, on Friday, February 8, 1935, at 12 noon.

A résumé of his service will be given by Dr Harry J. Lee

MILTON C. GREEN, M.D., Secretary

## SPRINGFIELD ACADEMY OF MEDICINE

On Tuesday evening, February 12, at the Springfield Academy of Medicine, Dr R. G. Leland, Director, Bureau of Medical Economics, American Medical Association, will speak on "Current Medical Problems," and Dr Nathan B. Van Etten, one of the signers of the minority report of the "Committee on the Costs of Medical Care," will speak on "An Economic Program for 1935."

JAMES A. SEAMAN, M.D., Secretary

## THE NEW ENGLAND ROENTGEN RAY SOCIETY

The February meeting will be held at the Boston Medical Library, Friday night, February 15, 1935, at 8:15 P.M.

## SCIENTIFIC SESSION

"Tumors of the Kidney" Dr E. Ross Mintz, Urological Service of the Massachusetts General Hospital

RICHARD DRESSEY, M.D., Secretary

## THE TRUDEAU SOCIETY

A meeting of the Trudeau Society will be held at the Prendergast Preventorium, Mattapan, Massachusetts, on February 12, 1935, at 4 P.M.

Dr Alton S. Pope will read a paper on the "Epidemiology of Tuberculosis." Dr John B. Hawes, 2nd, will discuss "The Scope, Function, and Results of Preventorium Care."

Dr Henry D. Chadwick, State Health Commissioner, will open the discussion.

MOSES J. STONE, M.D., Secretary

## SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the Headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, February 19, 1935, 12 noon. The speaker will be Thomas J. Richards, M.D., Assistant Visiting Surgeon, Boston City Hospital. His subject will be "Athletic Injuries." All physicians are cordially invited to attend both lecture and luncheon.

## HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) Tuesday evening, February 12, at 8:15 P.M.

## PROGRAM

Presentation of Cases

The Significance of Changes in Plasma Volume as Determined by the Dye Method, by Dr Magnus L. Gregersen

The Toxicity of Two Dyes Used in Plasma Volume Determinations, by Dr John G. Gibson, II.

MARSHALL N. FULTON, M.D., Secretary

SOCIETY MEETINGS,  
CONGRESSES AND CONFERENCES

## CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, FEBRUARY 11, 1935

Tuesday, February 12—

- 1:30 P.M. Radio Program WEEI "The Trends in Sewage Disposal" (Continued.)
- †2:30-4 P.M. Ward visit, Massachusetts Eye and Ear Infirmary
- 4 P.M. The Trudeau Society Prendergast Preventorium, Mattapan
- †4:45 P.M. Seminar, Pediatric Laboratory, Massachusetts General Hospital
- 4:30 P.M. Radio Program WBZ "Ear, Nose and Throat Diseases"
- 8:15 P.M. Harvard Medical Society Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance)

Wednesday, February 13—

- 3 P.M. New England Dermatological Society Massachusetts General Hospital

Thursday, February 14—

- \*8:30 A.M. Lecture and Clinic on Heart Disease by Dr Christian Peter Bent Brigham Hospital
- \*12 M. Clinico-Pathological Conference Massachusetts General Hospital
- †12 M. Clinico-Pathological Conference Children's Hospital
- \*3:30 P.M. Medical Clinic. Dr Christian Peter Bent Brigham Hospital
- †4:30 P.M. Surgical Clinic Children's Hospital Amphitheatre

Friday, February 15—

- †12 M. Clinical meeting of Children's Medical Staff, Massachusetts General Hospital Ether Dome
- 12:15 P.M. Boston University School of Medicine Surgical Clinic at the Boston City Hospital, Cheever Amphitheatre
- 5 P.M. Radio Program WEEI "Safe Water Supplies Nuisances"
- 8:15 P.M. New England Roentgen Ray Society Boston Medical Library, 8 Fenway

Saturday, February 16—

- \*10-12 Medical Staff Rounds Dr Christian Peter Bent Brigham Hospital

Sunday, February 17—

- 4 P.M. Harvard University (Medical School Building D, Longwood Avenue, Boston) Free lecture on Diabetes. Dr H. F. Root.

\*Open to the medical profession

†Open to Fellows of the Massachusetts Medical Society

February 7—Faulkner Hospital Clinical Meeting will be held at 5 P.M.

February 8—William Harvey Society will meet in the Auditorium of the Beth Israel Hospital, Boston, at 8 P.M.

February 8—Massachusetts Memorial Hospitals See notice elsewhere on this page

February 12—Harvard Medical Society See notice elsewhere on this page

February 12—The Trudeau Society See notice elsewhere on this page

February 12—Springfield Academy of Medicine See notice elsewhere on this page

## MASSACHUSETTS DIETETIC ASSOCIATION

February 12—Tuesday, 8 P.M. "Diabetic Children." Dr Priscilla White, Joslin Diabetic Unit.

March 12—Tuesday, 8 P.M. "The Effect of Diet on Anemia," Dr Lewis Diamond Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital.

March 19—Tuesday 2 P.M. Field Trip Visit Storehouse, First National Stores.

April 9—Tuesday 8 P.M. "Small Hospital Problems." Miss Margaret Copeland, Superintendent, Free Hospital for Women.

February 18—New England Dermatological Society will meet at the Massachusetts General Hospital at 3 P.M.

February 14—Clinic at the Peter Bent Brigham Hospital. See page 277.

February 15—Boston University School of Medicine Surgical Clinic at the Boston City Hospital. See page 277.

February 16—New England Roentgen Ray Society See page 278.

February 19—South End Medical Club. See page 278.

February 20—Robert Breck Brigham Hospital Clinical Meeting. See page 277.

February 20—Brookfield Medical Club will meet at the Hampshire House, Ware, Mass.

March May—International Medical Postgraduate Courses in Berlin. Programs and further particulars are obtainable from the Berlin Academy for Medical Postgraduate Training, Berlin NW7 Robert Koch Platz 7 (Kaiserin Friedrich Haus) German as well as foreign doctors may attend the courses.

March 11, 12, 13—Surgeons to meet in Jacksonville, Florida (Southeastern Surgical Congress). See page 82, issue of January 10.

April 29, May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr. E. R. Loveland Executive Secretary 133 135 South 16th Street, Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester, N.Y. For details address the Secretary Miss Frances N. A. Whitman Librarian Harvard University Schools of Medicine and Public Health Boston Mass.

June 27-29 Inc.—British National Association for the Prevention of Tuberculosis will be held at Southampton, England. Persons desiring further information should write to Miss F. Stickland Secretary of the Association at Tavistock House North Tavistock Square London W.C. 1, England.

July 22-27—Seventh International Congress on Industrial Accidents and Diseases, Brussels, Belgium. The American Committee of the Congress is under the chairmanship of Dr. Fred H. Albee New York for the Section on Accidents, and that of Dr. Emery R. Haynes Columbus, Ohio for Industrial Diseases. The American delegation to the Congress will sail from New York on August 3 and visit London, Amsterdam, The Hague and Paris and, if possible, Budapest. Physicians interested in the Congress or in the medical tour in conjunction with it may address the Secretary Dr. Richard Kovacs, 1100 Park Avenue New York City.

#### DISTRICT MEDICAL SOCIETIES

##### ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Annual Meeting will be held in May Time, place and subject to be announced.

E. S. BAGNALL, M.D. Secretary

##### FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March and May at the Weston Hotel, Greenfield, Mass.

CHARLES MOLINE, M.D. Secretary

Sunderland.

##### MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

March 12, 1935—Wakefield.

May 8, 1935—Winchester

K. L. MACLACHLAN M.D. Secretary  
1 Bellevue Street, Melrose.

##### NORFOLK DISTRICT MEDICAL SOCIETY

February 26, 1935—Hotel Kenmore, 8 P.M. The Use of Amniotic Fluid in Abdominal Surgery Dr Herbert L. Johnson

March 26, 1935—Fernald School for Feeble-Minded, Waverley Details to be announced.

May 1935—Annual Meeting Date, time and place to be announced.

##### PLYMOUTH DISTRICT MEDICAL SOCIETY

March—Plymouth County Hospital.

April—Lakeville Sanatorium.

#### SUFFOLK DISTRICT MEDICAL SOCIETY

March 27, 1935—Clinical Meeting at the Boston Lying In Hospital.

April 24, 1935—Clinical Meeting at the Children's Hospital.

The medical profession is cordially invited to attend these meetings.

ROBERT L. DeNORMANDIE, M.D. President.

GEORGE F. REYNOLDS, M.D., Secretary

#### WORCESTER DISTRICT MEDICAL SOCIETY

March 13, 1935—Wednesday evening The Memorial Hospital, Worcester Mass. 6:30 P.M. Buffet supper 7:30 P.M. Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10, 1935—Wednesday evening Worcester Hahnemann Hospital, Worcester Mass. 6:30 P.M. Dinner 7:30 P.M. Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening An annual Meeting of the Worcester District Medical Society. The time and place of this meeting will be announced later

ERWIN C. MILLER, M.D. Secretary

7 Elm Street, Worcester

#### BOOKS RECEIVED FOR REVIEW

*Transactions of the American Association of Genito-Urinary Surgeons. Forty-sixth Annual Meeting held at Hot Springs, Va. May 14, 15 and 16 1934 Volume XXVII. 438 pp. Saint Paul and Minneapolis The Bruce Publishing Company*

*Standard Classified Nomenclature of Disease Compiled by The National Conference on Nomenclature of Disease. Edited by H. B. Logie. 870 pp New York The Commonwealth Fund. \$3.50*

*Medical Tactics and Logistics. Colonel Gustavus M. Blech and Colonel Charles Lynch. 205 pp Springfield and Baltimore Charles C Thomas \$4.00*

*How to Practice Medicine Henry W. Kemp 156 pp New York Paul B. Hoeber Inc. \$2.50*

*The Clinical Aspects of Visceral Neurology With special reference to the surgery of the sympathetic nervous system. W. K. Livingston 254 pp Springfield and Baltimore Charles C Thomas \$5.00*

*Clio Medica Edited by E. B. Krumbhaar XV French Medicine M. Laigle Lavastine and M. Raymond Molinery 187 pp New York Paul B. Hoeber Inc. \$2.50*

*La Renaissance de la Médecine Humorale Auguste Lumière. '04 pp Lyon Imprimerie Léon Sézanne.*

*Annual Report of the Surgeon General of the Public Health Service of the United States. For the fiscal year 1934 143 pp Washington United States Government Printing Office. \$7.50*

*Poliomyelitis. A handbook for physicians and medical students. Based on a study of the 1931 epidemic in New York City John F. Landis and Lawrence W. Smith. With a section on the orthopedic after care of the disease by Garry De' Hough, Jr. 275 pp New York The Macmillan Company \$3.00*

*Aids to Psychiatry W. S. Dawson. Third Edition. 318 pp Baltimore William Wood & Company \$1.50*

*Aids to Embryology Richard H. Hunter Second Edition 172 pp. Baltimore William Wood & Company \$1.75*

## BOOK REVIEWS

**Surgical Applied Anatomy** Sir Frederick Treves, Bart Philadelphia Lea & Febiger 1934

It is always a great satisfaction to welcome a new edition of Treves's *Applied Anatomy*, that marvel among textbooks which for fifty years has maintained unabated the prestige which it established immediately upon its first publication. It was in 1883 that this book first made its appearance. Subsequent editions by the author, and later by Sir Arthur Keith and Mr. Colin Mackenzie, have maintained the standard of the original with gradual modification to suit the progress of the times but without essential alteration in the spirit and purpose of the work. This ninth edition, edited by Mr. C. C. Choyce, M.D. (Edin.), F.R.C.S. (Eng.), aims likewise "to preserve the relationship between the anecdotal surgical anatomy of Treves's time and that of to-day." Though a good deal of the original text has disappeared in the interests of anatomical and surgical detail, enough has been retained to preserve the historical interest and essential temper of the original. The total number of pages has been increased by only eighteen over the seventh edition of 1917. The total number of illustrations has been increased by twenty one, but of these only sixty six are in color, as against seventy four in 1917. To students and teachers alike, this book bids fair to continue for years a cherished and esteemed *vade mecum*, which may be said of it in the true sense that it is a compendium which can go everywhere in the possessor's pocket. Like the schoolmaster in the *Deserted Village*, the marvel still grows — that it can carry in such relatively small compass all the valuable material which it contains.

**Prolapsus du Rectum** Carrasco 196 pp Paris Masson et Cie 35 fr

A paper covered edition of one hundred and ninety-six pages with forty-one illustrations, the book is an extensive review of the literature on this subject since the complete work of Lenormant in 1903, together with numerous case reports. Carrasco derives his own material from the clinic of Henri Hartmann in Paris, and Hartmann has prefaced the book. The author discusses, in the twenty eight pages of Part I, the etiology, pathology, and symptomatology of rectal prolapse. Part II, which comprises the bulk of the book, deals entirely with the numerous and varied methods of treatment, non-surgical, semi-surgical, and surgical, many of which are familiar to us. He reviews the numerous sclerosing injection solutions which have been used, and likewise the use of the cautery to produce inflammatory adhesions of the rectum to its surrounding tissues. The procedure of Thiersch, in which a wire, silk thread, or elastic ligature is inserted with a curved needle around the anal ring subcutaneously and left in place for three to twelve months, is re-

viewed, and case records are given in connection with most of the procedures. Eleven different abdominal suspension operations are considered in detail, and in the following chapter are outlined nine perineal procedures, among which that of Cuneo and Seneque is described and illustrated in detail.

Carrasco has also taken up special procedures to be employed in cases of prolapse of the new anus after resection of the rectum for cancer and, finally, he has discussed the association of rectal with genital prolapse, and the surgical treatment of this complication.

An extensive bibliography of seventeen pages is appended. The book represents a great deal of work on the part of the author, and work well done. It is complete, easily readable, and a real contribution to the subject.

**Surgical Clinics of North America** October, 1934  
Volume 14, Number 5 Lahey Clinic Number 260  
pp Philadelphia W. B. Saunders Company  
\$12.00 per year

This issue opens with a group of interesting clinics on gastroenterological topics such as cancer of the stomach, total gastrectomy, hemorrhage in peptic ulcer, selection of operation and integration of medical and surgical therapy in peptic ulcer. Cattell describes a simple method of closing small intestine fistulae by placing in the lumen of the intestine a small button which is tied to a similar button on the surface of the abdomen.

Lahey discusses the problem of painless jaundice. If the gall bladder is to be used for an anastomosis, he much prefers to make the connection to the jejunum rather than to either the stomach or duodenum. Clute and Swinton now believe that it is impossible to predict which cases of obstructive jaundice will be subject to postoperative hemorrhage, although bleeding is more frequent where the sedimentation rate is rapid.

The technic of intratracheal anesthesia is completely and clearly described by Sise. Photographs are generously used, especially to illustrate the use of the direct laryngoscope in passing the tracheal catheter.

Overholt demonstrates a very simple, effective method of securing tidal irrigation in the closed drainage treatment of empyema.

No collection of papers from the Lahey Clinic would be complete without some new light on thyroid problems. The aspects here considered are diagnosis of hyperthyroidism, operations in the presence of cardiac disease, goiter in patients over sixty, and myasthenia gravis and goiter.

Cattell discusses kraurosis vulvae for which he advises excision of the involved area. He also reports a modification of their technic for plastic closure following excision of a pilonidal sinus.

These with several other interesting clinics make this number one of genuine value for any surgeon.

Review of Dr F J Cotton's Chapter on Fractures in Lewis Surgery Second Edition.

An endeavor to make a scientific monograph presentable as a literary production has long been something to be desired in our textbook literature. After all there would appear to be nothing incompatible in this for there is no reason why a doctor should not say what he has to say in a succinct and graphic style—if he can. A fillet of sole may come off the grill perfectly cooked and yet the tartar sauce that is served with it takes away none of whatever nutritive value it possesses and at the same time it makes it more palatable to many tastes. It is therefore, refreshing to read the section on fractures in Dr Dean Lewis second edition written by Dr Frederic J Cotton than whom there is no one in the country better qualified to write authoritatively and certainly no one has ever done so in a more acceptable manner than in the article under consideration.

Possessed of an incisive and picturesque method of presentation in verbal communications he has not departed from it in this revision of his original text. This has resulted in a clearance of unnecessary verbiage and a departure from a more academic style so generally affected when one formally sets out to commit his thoughts to paper. The values allotted to different features whether of treatment or diagnosis, and very obviously based upon a not inconsiderable experience emphasize the second impression, which is perhaps enhanced by the above-mentioned style of presentation. The effect of such statements is invariably to help one to concentrate on the essentials of the situation and not be too fussy about refinements of technique where they are not the essentials. Emphasis is laid upon the fact that the goal to be reached is primarily a functional restitution, by the most direct and safest methods that experience has taught us to employ. If this can be accomplished by a "restitutio ad integrum," so much the better but if not, and the first object is achieved there can no blame attach.

What the reviewer would again emphasize, and commend, is the production of a textbook article which any doctor may read and at the end may very likely exclaim, "It was a pleasure to have read this." At the same time that the style attracts there is no feeling that there is any lack of "up to the minute" authoritative statement. One gets the impression that conservatism is the guiding principle and yet due latitude is allowed to radicalism under the proper circumstances, which circumstances are clearly defined.

**Periodic Fertility and Sterility in Woman** A natural method of birth control. Professor Hermann Knaus. 162 pp. Vienna Wilhelm Maudrich. \$8.00

Previous to the publication of Dr Knaus's book on Periodic Fertility and Sterility in Woman there have been two small books in English on this same subject. The first, "The Rhythm" by Leo J Latz

M.D. and the second, Conception Period of Women by Kyusaku Ogino M.D. The first of these was for popular use only. The second combined a résumé of the literature on this subject and particularly the scientific work of Dr Ogino with directions for the use of the method by patients.

Dr Knaus's book is published entirely for the medical profession. While it is somewhat polemic in tone it does give a most satisfactory and complete review of all the experimental and truly scientific work on the physiology of reproduction which has led to the promulgation of the new point of view of the periodic variability of woman's fertility. The idea which has been tenaciously held for many years that woman can conceive at any time in her menstrual cycle finds no corroboration whatever in the mass of data which have been accumulated within recent years on mammalian reproduction including that of the primates. Knaus's argument seems incontrovertible that reproduction in man follows similar fixed rules. The only doubt is as to the invariability of these rules. After reading Dr Knaus's work no one can doubt that ovulation occurs only once in the month and that fertilization even allowing for the life of the spermatozoa in the woman's secretions and for the slight doubt as to how long the egg remains capable of being fertilized, can only occur over a period of two or three days at the most. Many many instances are quoted by Dr Knaus of women who have used this knowledge as a successful means of birth control. What we lack is a controlled group of some five hundred couples who have used this method of avoiding the fertile time in the month to control conception or of utilizing it when they have wanted children. A study of this sort should cover two or three years and should report with the greatest detail any apparent failures of the method. This knowledge is needed before we can recommend the use of this method to the individual patient whose health makes it essential that pregnancy be avoided. But in spite of this lack of human statistics we can thoroughly recommend the book and we believe that time will demonstrate the correctness of the general thesis that there is a natural and harmless method of regulating reproduction.

**The Principles of Therapeutics. The Abraham Flexner Lectures. Series Number Three.** Francis Richard Fraser. 135 pp. Baltimore The Williams & Wilkins Company

This volume constitutes series number three of the Abraham Flexner Lectures at Vanderbilt University Previous to the writing of the work the author had been associated with the compilation of the new British Pharmacopoeia in which an attempt was made to test the therapeutic value of all substances listed.

Aside from the first chapter on the historical development of therapeutics there is little that cannot be found in a good textbook of medicine.

**That Heart of Yours** By S Calvin Smith. 212 pp Philadelphia and London J B Lippincott and Company \$2 00

In the foreword of this book the author makes it clear that its purpose is "to supplement and amplify the information which physicians give to a heart patient" It is directed at the patient and is meant for his perusal rather than for the physician, although many of the latter may also derive profit from its reading It is written in a very light vein and can be read very rapidly Throughout its chapters one is impressed by a most optimistic point of view This is particularly adapted to produce a proper psychological effect upon one afflicted with heart disease, even if the cold facts sometimes tell a different story The value of this volume to the patient need not be affected even if some statements like the following are at least open to question, "but rheumatic fever can be anticipated and its course and after effects either modified or averted by early recognition of its advent" and "that probably sixty five per cent of the attacks of angina pectoris that appear in men who are in their forties result from sexual overindulgence" There also seems to be an undue emphasis on the importance of infected teeth as a cause of heart disease

If one believes that popularizing medical information to the lay public is worth while, this volume can serve at least as a buffer to the ever-increasing dread of heart disease that has stricken our country

**L'Eczéma du Nourrisson** Par les docteurs M Péhu et R. Aulagnier 174 pp Paris Gauthier Villars, Éditeur, 1934 25 fr

In this little book the authors consider eczema as a distinct entity to be treated not only from the local point of view but as originating on the background of hereditary allergy The symptoms are discussed in great detail and the various types are delimited so sharply as to be almost artificial The admission that the various types may occur together tends to obscure this sharp definition into types There is much emphasis on the allergic factors and relationships Stress is laid on laboratory tests, the variations in the serum protein of the blood, eosinophilia, the various types of skin tests by intradermal or patch tests, or by passive transfer The intradermal tests, especially by an enterococcus, are especially considered Hypotheses on the nature of infantile eczema are discussed, and the hereditary allergic nature is again brought out Attention is called to the sudden unexplainable deaths occurring in a small proportion of cases of infantile eczema The authors state that general treatment ought to be given first place, and that bacterial vaccines ought to be systematically employed in all cases of eczema as the method of choice to alter the allergic state Numerous formulae for external applications are given, but care should be taken that these are not "aggressive or brutal" A bibliography of references, mostly in the French literature, is appended

**Annals of the Pickett-Thomson Research Laboratory Monograph XVI, Part II Influenza** By David Thomson and Robert Thomson 1557 pp London Baillière, Tindall and Cox \$17 50

Part I of this monograph, which was reviewed in the July 12 issue of the *Journal*, now appears to have been, in the words of Capt Henry, "only the beginning, folks, only the beginning", for here are some 400,000 additional words on the subject, including a bibliography of over 4500 references The authors may well congratulate themselves for their "health has been maintained in spite of the stupendous effort"

The present volume is devoted to the complications and sequelae, their bacteriology, the pathology, epidemiological data, prevention and treatment of influenza. In turning over this great dust pile many interesting but useless articles have been uncovered The authors' own too infrequent views, appraisals and summaries are the most instructive sections of the work They tell us again that the outstanding relationship between influenza and encephalitis is their mutual association with filterable virus, that Pfeiffer's bacilli, the strepto- and pneumococci are variable, secondary or complicating organisms, that vaccines, if they are of any prophylactic value, are protective against the pulmonary complications, that views regarding the effect of influenza on the course of pulmonary tuberculosis are discordant, thus, and much more

The essential weakness of the material rests in the fact that it so often and necessarily harks back to the data of 1918 We knew as little about influenza then as we did about pernicious anemia. Perhaps some day our present knowledge of influenza will take on the quaint chaotic look of the anemia literature of that decade That day will dawn when and if we learn to understand and deal with the filterable virus Then this pile will become history, and good history, too

**Murrell's What to Do In Cases of Poisoning** By P Hamill Beginning the Fourteenth Edition of "What to Do in Cases of Poisoning" by the late Dr W Murrell 208 pp New York Paul B Hoeber, Inc \$1 50

It is probably true that no man will read a very large book on poisons unless he is particularly interested in toxicology, but this little work is well worth the hour required to go through it The fact that it has gone through thirteen previous editions emphasizes its utility The section on criminal toxicology deserves more than a hasty glance It contains all the essential facts, arranged in easy reference form Many of the clinical conditions are placed in outline form with the suggestion of the type of substance most likely to cause a particular group of signs and symptoms It should be in the emergency room of every hospital

# The New England Journal of Medicine

VOLUME 212

FEBRUARY 14, 1935

NUMBER 7

## NEW ENGLAND SURGICAL SOCIETY

### ACUTE HEMATOGENOUS OSTEOMYELITIS\*

BY RICHARD H. MILLER, M.D.†

THIS paper constitutes a preliminary report, its object being to present in a concise manner our present conception of the pathology, pathogenesis and treatment of this disease with reference to the recent literature, with brief consideration of cases which have come under our observation, and with certain recommendations for its treatment.

The condition is the result of a local settling of bacteria usually in the metaphysis of a long bone, and predicates a pre-existent bacteremia which may, however, be subclinical, without signs or symptoms.

It involves almost exclusively the long bones of the upper and lower extremities, hematogenous infection of flat and irregular bones such as the ilium<sup>12</sup>, jaws<sup>14-22</sup>, patella<sup>1</sup>, scapula<sup>1</sup>, skull<sup>24</sup>, and vertebrae<sup>12-14</sup>, is certainly seen from time to time, but does not enter into this discussion. The usual order of frequency of involvement, according to Beckman<sup>4</sup> is tibia, femur, humerus, fibula, radius and ulna. Pyrah and Pain<sup>19</sup> list the frequency as follows: (1) upper tibia, (2) lower femur, (3) lower tibia, (4) lower fibula, (5) lower radius, thus it is seen that the greatest number of cases are in proximity to the knee joint. It is a disease primarily of childhood and adolescence, the period of active growth most common between the ages of five and fifteen, and more frequent in boys than girls.

For a proper conception of the pathological process which takes place, a knowledge of the anatomy and physiology of bone, particularly in childhood, is indispensable, and a brief exposition of them is herewith given. The long bone has a shaft, or diaphysis, and at each end an epiphysis, the two are separated by an epiphyseal, or conjugal cartilage. The diaphysis, except at its ends, is hollow, containing the medulla, at each extremity the bone is cancellous, one might say semisolid or porous, and this part, the one most frequently involved in osteomyelitis, is called the metaphysis. The epiphyseal, or conjugal, cartilage, separating the metaphysis from the epiphysis, contains active

cells which produce bone and are responsible for longitudinal growth. Closely encasing the bone is the periosteum, in two layers, the outer or fibrous one and the inner or osteogenetic layer, which produces the concentric growth of the bone. The periosteum is continuous with the epiphyseal cartilage, in bones which have many muscular attachments like the femur, it is with difficulty detached, but in others, like the tibia, it is easily stripped up. Infectious trauma, if it destroys the epiphyseal cartilage, may result in cessation of bone growth, if, on the other hand, its action is one of irritation and stimulation of the cartilage, overgrowth and abnormal length may occur.

The circulation to the diaphysis itself is two-fold, through the nutrient artery and its branches and through the small periosteal vessels. The nutrient artery enters the shaft somewhere near its middle, divides into ascending and descending branches, and supplies the medulla, inner parts of the shaft, and the metaphysis. In the metaphysis the vessels form terminal venous loops where the circulation is slower than elsewhere<sup>10</sup>. The outer portions of the shaft and the metaphysis receive blood vessels from the periosteum, in the diaphysis itself the branches from the central nutrient artery anastomose with those from the periosteum. In the metaphysis the situation is not so clear, it used to be thought that there was no anastomosis between the nutrient and the periosteal vessels, but now we believe that there probably is such a communication. The epiphysis receives its blood supply from both the periosteal and the capsular vessels. Blood vessels do not traverse the epiphyseal cartilage in either direction.

The organism most commonly present is the staphylococcus, next the streptococcus much less frequently one finds others such as the bacteria of influenza and pneumonia, and very rarely the typhoid bacillus. In one hundred cases studied by Albee<sup>1</sup> there was a pure culture of staphylococcus in forty per cent, streptococcus in fifteen per cent, and in a substantial proportion a mixture of the two. There can usually be found somewhere in the body a pre-existent primary focus of infection such as furuncle or abscess. From this focus, bacteria have been set

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## DIABETIC COMA\*

BY ALEXANDER MARBLE, M.D.,† HOWARD F. ROOT, M.D.,‡ AND PRISCILLA WHITE, M.D.‡

**A**LTHOUGH everyone agrees that few should die from diabetic coma and that none should develop it, we have had 55 cases since our last report<sup>1</sup>. In the last ten months there has been only one death among 32 consecutive cases treated at the New England Deaconess Hospital. This death was in a patient (2786) who although rescued from diabetic coma, died from an accompanying pneumonia of sudden onset and rapid course. In the period from October, 1932 to December 1933, however, there were 5 deaths among 23 consecutive cases. These 5 patients were adults and had much in common, with them circulatory collapse and anuria were the outstanding clinical features. They will be discussed in some detail later in the paper since it is the adult patient with neglected or unrecognized diabetes, brought for treatment in a state of shock with extreme dehydration and a low blood pressure, who presents the greatest challenge to the physician.

In the entire period since the last report<sup>1</sup>, a total of 55 cases of diabetic coma have been treated (from October, 1932 to October, 1934). Twenty-seven of these were received in the first 9 months of 1934 and represent 28 per cent of the 961 diabetic admissions for all causes during this same period. On the average, between 2 and 3 patients with diabetic coma are received each month. These facts constantly impress upon us the need for redoubling efforts to eliminate this complication in the course of diabetes.

One cannot overemphasize the fact that diabetic coma is usually preventable and that its acquisition entails a physical insult to the patient as well as an economic loss to him and usually to the hospital. The average patient who acquires diabetic coma or the family of such a patient is not financially able to pay the hospital expenses let alone anything in the way of a doctor's fee. The total cost to a patient or to a hospital for the treatment of an attack of coma is not far from \$100. The importance of this is made greater by the fact that certain patients are repeated offenders. In the present series of 55 cases, 4 patients (7686, 9233, 10550, and 12166) appear twice within the 23 month period studied. In the total series of 276 cases to date, 25 patients appear twice, 5 appear three times, and one patient four times, another five times, and still a third, six times.

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These 33 patients, then, have been responsible for 80 of the 276 instances of coma!

Ralli and Waterhouse<sup>2</sup> have reported the case of a young girl (our one-time patient, 10505) who died in diabetic coma at the age of 16 1/2 years having had 22 hospital admissions in which acidosis, usually marked, was present. The duration of diabetes at the time of death was 8 1/2 years. Such chronic offenders present a great problem and demand the closest of supervision. Diabetic patients should be made to realize that modern treatment with adequate diets and insulin has placed in their own hands the responsibility for keeping well.

*Responsibility of the Physician.* Patients look to their family doctor for guidance in the proper care of their diabetic condition. This trust is a challenge to the knowledge and alertness of the physician. How tragic it is when he fails in his duty of diagnosing oncoming diabetic coma, or, recognizing it, fails to treat it early and adequately! The letter below describes just such a situation and needs very little comment. It is written by a wife regarding the death of her husband. This patient was first seen on January 6, 1922, onset of diabetes was in November, 1921 at the age of 27 years. The letter is published with her permission (the italics have been added).

October 16, 1934

My dear Dr. Joslin

I have put off writing this note because it was hard to write, but I feel it is only fair to you and to other diabetics that I do it.

[Mr.] died very suddenly last Friday. He had been feeling especially well and had told me not ten days before his death that he had never felt better in his life.

I had had a slight attack of intestinal grippe and we thought that that was what [Mr.] had when he went to bed nauseated on a Friday afternoon. He breathed very heavily and couldn't seem to get fresh air enough from then on, but none of us realized the seriousness of it. Our doctor finally told me at midnight Saturday night that he thought it was sugar and that we might have to give him a quantity of insulin in the morning but he didn't even suggest giving it then. About 7:30 Sunday morning there was a decided change in his looks and breathing and I called the Doctor quickly but [Mr.] was gone in an hour and stimulants had no slight effect upon him.

I should like to know whether or not with the right treatment anything could have been done for him and also if the nervous condition might have brought up the blood sugar.

I have two children, 10 and 6 years, and if there is anything I can do to help them avoid diabetes besides being careful of sugar, I should be most grateful if you would suggest it.

Very sincerely,

TABLE II

## Diabetic Coma

Summary Table—Comparative Study by Averages of the Six Series

Series and Number of Cases	Age at Coma, Years	Duration of D. M., Years	Date	Blood				Urine at Entrance				Insulin Units				Final Cases			
				Sugar		Plasma CO Combining Power		Protein Nitrogen Volume		Direct Sugar Acid Cent		Dose		Dose		Dose		Dose	
				Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Day	Day	Day	Day	Day	Day	Day	
I 24 Cases	21.5 <sup>a</sup>	2.4 <sup>a</sup>	May 1923 Mar., 1925	0.47 <sup>a</sup>	0.0 <sup>a</sup>	15 <sup>a</sup>	33 <sup>a</sup>	31 <sup>a</sup>	47 <sup>a</sup>	++ <sup>a</sup>	++ <sup>a</sup>	1.3 <sup>a</sup>	1.4 <sup>a</sup>	63 <sup>a</sup>	58 <sup>a</sup>	5 <sup>a</sup>	21		
II 28 Cases	31.6 <sup>a</sup>	2.8 <sup>a</sup>	Apr.-1925 Feb., 1927	0.49 <sup>a</sup>	0.0 <sup>a</sup>	14 <sup>a</sup>	20 <sup>a</sup>	30 <sup>a</sup>	46 <sup>a</sup>	++ <sup>a</sup>	++ <sup>a</sup>	3.1 <sup>a</sup>	1.6 <sup>a</sup>	69 <sup>a</sup>	43 <sup>a</sup>	4 <sup>a</sup>	14		
III 53 Cases	29.1 <sup>a</sup>	4.0 <sup>a</sup>	Mar.-1927 Feb., 1929	0.63 <sup>a</sup>	0.21 <sup>a</sup>	13 <sup>a</sup>	28 <sup>a</sup>	38 <sup>a</sup>	60 <sup>a</sup>	++ <sup>a</sup>	++ <sup>a</sup>	3.1 <sup>a</sup>	1.3 <sup>a</sup>	40 <sup>a</sup>	39 <sup>a</sup>	6 <sup>a</sup>	9		
IV 74 Cases	31.2 <sup>a</sup>	3.5	Feb., 1929 Aug., 1931	0.49 <sup>a</sup>	0.20 <sup>a</sup>	11 <sup>a</sup>	29 <sup>a</sup>	35 <sup>a</sup>	48 <sup>a</sup>	++ <sup>a</sup>	++ <sup>a</sup>	3.7 <sup>a</sup>	2.5 <sup>a</sup>	49 <sup>a</sup>	41 <sup>a</sup>	13 <sup>a</sup>	18		
V 42 Cases	26.1 <sup>a</sup>	3.5 <sup>a</sup>	Oct., 1931	0.47 <sup>a</sup>	0.15 <sup>a</sup>	12 <sup>a</sup>	28 <sup>a</sup>	33 <sup>a</sup>	37 <sup>a</sup>	++ <sup>a</sup>	++ <sup>a</sup>	3.0 <sup>a</sup>	2.0 <sup>a</sup>	51 <sup>a</sup>	45 <sup>a</sup>	2 <sup>a</sup>	6		
VI 65 Cases	28.5 <sup>a</sup>	4.3 <sup>a</sup>	Oct., 1932 Oct., 1934	0.51 <sup>a</sup>	0.17 <sup>a</sup>	1 <sup>a</sup>	29 <sup>a</sup>	34 <sup>a</sup>	40 <sup>a</sup>	++ <sup>a</sup>	++ <sup>a</sup>	3.6 <sup>a</sup>	1.9 <sup>a</sup>	52 <sup>a</sup>	44 <sup>a</sup>	6 <sup>a</sup>	11		

The subfigures indicate the number of determinations upon which the average is computed in each series.

This responsibility of the physician has recently been stressed by Dr George H Bigelow, Director of the Massachusetts General Hospital and formerly Health Commissioner of the Commonwealth of Massachusetts<sup>3</sup>. He states "The unrecognized diabetic coma which still comes to the hospital is medically about as reprehensible as the case of diphtheria similarly unrecognized and untreated. The symptomatology which should arouse suspicion and the methods for precise diagnosis are to a certain extent analogous in the two diseases. The doctor unequivocably recognizes his responsibility in the diphtheria case and yet there is still too much complacency in regard to the neglected diabetic."

"It has been shown again and again that diphtheria mortality increases with the day of the disease in which antitoxin is first administered. Similarly in diabetes delay is the essence of failure. Prompt recognition and specific treatment must be recognized as vitally in diabetes as in diphtheria."

*Clinical Material.* In our last report<sup>1</sup> a summary was given of 221 attacks of coma in 189 patients<sup>2</sup> for the period from May, 1923 to October, 1932. To this number are now added the 55 cases (in 51 patients) in the present series, making a total of 276 cases in 228 patients<sup>\*</sup> up to October, 1934. Eleven of the present group appeared in the earlier series.

In table I are recorded in detail the data regarding the individual cases, and in table II comparison is made between the present and the preceding groups of cases.

The average age of the patients does not vary much from year to year, being from 26 1 to 31 3 years, in the present series the average was 28 5 years and two extremes of age are seen. Case No 12986 was only 28 months old, while Case No 7210 was 71 8 years of age. Both patients recovered although the older patient has since developed pulmonary tuberculosis.

In the present series there were 18 males and 33 females. This preponderance of females becomes all the more striking when one considers that in the age group concerned, diabetes is more common in males than in females.

The duration of diabetes prior to the onset of coma was on the average 4 3 years which is the greatest of any series thus far. It is noteworthy, however, that in 12 of the 55 cases, coma occurred within less than two months after the probable onset of diabetes and in each instance the diabetic condition had been recognized only after the onset of symptoms of acidosis.

The average blood sugar on admission was 0 51 per cent, this had fallen on the second and third days to 0 17 per cent. A high blood sugar

value does not necessarily imply a poor prognosis, in the present series there were 5 cases with an initial blood sugar value of over 1 per cent, and of these, three recovered and 2 died. To date among 276 cases of coma we have seen in all 10 cases in which the initial blood sugar value was 1 per cent (1000 mgm per 100 cc) or above, of these 6 recovered and 4 died. Haines and Davis<sup>4</sup> have reported 3 cases of diabetic coma (with recovery) in which the initial blood sugar values were above 1 per cent.

The average CO<sub>2</sub> combining power of the blood plasma was the same as that of the preceding series, namely 12 volumes per cent, this had risen on the second day to 29, and on the third to 34 volumes per cent. Five of the 55 cases had on admission a CO<sub>2</sub> combining power of 10 volumes per cent and 15 others a value below that figure.

The present series was notable in that 20 per cent of the cases had on admission a blood non-protein nitrogen of 45 milligrams per cent or over. The average value on the first day of treatment of the coma and the outcome of the cases are shown below.

Case No	Blood Non Protein Nitrogen, mgm /100 cc	Result
6533	136	Recovered
10719	58	Recovered
11920	97	Died
12098	91	Recovered
12139	118	Died
12434	56	Recovered
12467	63	Recovered

Determinations of the blood non-protein nitrogen were not made in Case Nos 7690 and 11270 but in these patients considerable nitrogen retention was in all probability present.

The average amount of insulin used in the first 24 hours was 196 units or practically the same as the corresponding figure for the preceding series. It is a noteworthy and encouraging fact that in 20 of the 53 cases of coma developing outside the hospital, an initial dose of insulin varying from 13 to 90 units had been given at home before leaving for the hospital. This had been given usually by the home physician, though occasionally by the patient or one of the family.

*Mortality.* The mortality of the present series was 10 9 per cent. This is considerably higher than the 5 per cent mortality of the preceding series but is less than that of all other groups previously reported except that of 1927-1929 when it was 9 per cent. The higher rate in the present series is due to the inclusion of 4 cases (described in detail below) which were admitted in a moribund or semi-moribund state after several hours of unconsciousness.

To the 29 fatal cases of coma listed in the report 2 years ago, must now be added the 6

\*In the former series by mistake one patient who had more than one attack of coma was counted twice. 228 instead of 229 therefore represents the correct total number of patients.

deaths in the present series. This brings the total to 35 fatal cases among 276 coma admissions in 228 patients, a case mortality of 12.7 per cent.

In the insulin era one-ninth of all diabetic deaths in the hospital on the service of Dr El Hott P Joslin have been in diabetic coma. Since May 1923 there have been 306 diabetic deaths, of these the 35 coma deaths represent 11.4 per cent. In table III the fatal cases are listed by years.

TABLE III  
DEATHS IN COMA COMPARED WITH TOTAL DIABETIC DEATHS

New England Deaconess Hospital  
May 1923 to October 1934  
(Experience of Dr Elliott P Joslin and Associates)

Year	Total	Deaths from	Per Cent of Total
	Diabetic Deaths	Diabetic Coma	
1923 (from May)	7	2	28.6
1924	19	3	15.8
1925	20	3	10.0
1926	18	1	5.5
1927	19	3	15.7
1928	24	3	12.5
1929	33	8	9.1
1930	89	4	10.3
1931	28	7	25.0
1932	41	3	4.9
1933	31	4	12.9
1934 (up to October)	27	1	3.7
Totals and Average	306	35	11.4

Quite recently Stafne<sup>6</sup> has reported the results of a study of deaths among diabetics in the state of Minnesota for 1931. He sent questionnaires to the physicians who in that year recorded diabetes as a chief or contributory factor of death on 547 death certificates. In 105 or 28 per cent of the 375 cases in which replies were received, diabetic coma was held responsible for death. Parenthetically it is of interest that "of the patients in these 105 cases, only sixty six, or 63 per cent, received insulin at any time during the final illness when acidosis was developing and it was needed most urgently." Similar mortality statistics were found in the city of Duluth by Bartels and Blum.<sup>7</sup> Among 90 diabetics dying in hospitals in 1931, there were 24 cases, or 26 per cent, in which coma was the cause of death.

*Influence of Age on Mortality.* In the prognosis of uncomplicated diabetic coma two factors are outstanding (1) the duration of pronounced acidosis before institution of treatment and (2) the age of the patient. Youth carries with it a great advantage. In the present series

there were no deaths in patients under 30 years of age. Among the 276 instances of coma in the entire series, 73 were in patients under 15 years of age at the time of the attack of coma. Of these there has been only one death, and that was in a girl (9162), 14.1 years of age with diabetes of 38 years' duration, who entered the hospital in a moribund state after three days of nausea, vomiting and abdominal pain at home. Even if one enlarges the group of coma cases among juvenile patients to include all instances occurring in patients under 20 years of age at the time of coma, one finds that there have been but 3 deaths among 128 instances of coma. This case mortality of 2.8 per cent contrasts sharply with that of 21.6 per cent among patients 20 years of age or over (32 deaths in 148 cases).

Table IV shows the mortality in the 276 cases by decades. The benefit conferred by youth is clearly demonstrated.

TABLE IV  
INCREASING DANGER OF COMA WITH ADVANCING AGE

Age at Coma by Decades	Total	Fatal	
	Cases	Num ber	Per Cent
First	19	0	—
Second	109	3	2.8
Third	35	3	8.6
Fourth	31	5	16.1
Fifth	33	6	18.1
Sixth	31	13	42.0
Seventh	14	4	28.6
Eighth	4	1	25.0
Totals and Average	276	25	12.7

In a recent article John<sup>8</sup> stresses the necessity for early and adequate treatment of diabetic coma. His paper presents his experience with 218 patients largely in the first and second decades of life. Of these there were 31 instances of acidosis (in 12 of the 22 cases in which the plasma CO<sub>2</sub> was recorded, this value was above 20 volumes per cent) under his immediate care with 5 deaths. Of these 5 patients there was one each at age 11, 15, 16, 17, and 18 years of age.

*Causes of Death During Coma and after Discharge from the Hospital.* Including the 6 fatal cases now reported, there have been 35 deaths from coma in the entire series. Of the 193 cases who left the hospital after recovery from coma, 26 have since died (8 since the last report), 1 is untraced, and 166 are known to be alive. In table V below are listed the causes of death of the 61 fatal cases. Of the 26 cases dying after leaving the hospital following recovery from coma, 5 subsequently died elsewhere in another attack of diabetic coma and 4 died of tuberculosis.

The average duration of diabetes among the 35 fatal coma cases was 33 years and among the 26 cases dying after recovery from coma 73 years. The latter figure is high enough to show that despite one or more attacks of coma, the life expectancy of the diabetic is now steadily increasing. A still more encouraging fact is that the average duration of diabetes to Jan-

tion was very poorly absorbed from the subcutaneous tissues. The respirations became more feeble and shallow and the patient died 7 hours after entrance. At autopsy no anatomical cause of death was found.

2 Case No 11920, male, 51 years of age was admitted to the hospital on May 25, 1933. Sugar had been found in his urine 3 days before but no insulin had been given. On admission he was very drowsy, barely responding to stimuli. His pulse was scarcely perceptible and the blood pressure was only 70 mm systolic. The blood sugar was 0.62 per cent, the CO<sub>2</sub> combining power 15 volumes per cent, and the non-protein nitrogen 97 mgm per cent. With the use of 390 units of insulin over a period of 13 hours the blood sugar fell and the CO<sub>2</sub> combining power rose satisfactorily. Clinical improvement did not correspond, however, the blood pressure fell at times to 40 mm systolic, he became anuric, and died 13½ hours after admission. Autopsy revealed a left hydronephrosis and hydroureter which may well have played a rôle in the poor response to treatment.

3 Case No 12139, male 56 years of age was admitted to the hospital on September 7, 1933 totally unconscious. He had begun to get drowsy at about 11 a.m., by 3 p.m. was in semicomma, and was brought to the hospital at 8 p.m. Sugar had never been found in his urine until the admission specimen was examined at the hospital. He had been given 90 units of insulin just before leaving home. On admission the blood sugar was 1.07 per cent, the CO<sub>2</sub> combining power 19 volumes per cent, and the non protein nitrogen 118 mgm per cent. The urine (only 30 cc obtained by catheter) contained 5.2 per cent sugar but no diacetic acid, this may have been an accompaniment of renal block. No urine was obtained through the catheter after the small initial collection. The blood pressure on admission was 54 mm systolic and steadily fell despite treatment. The patient died 4 hours after entrance. At autopsy other than hypostatic congestion of the lungs, dilatation of the stomach, and slight degeneration of the adrenal medulla, no anatomical cause of death was found.

Richardson<sup>8</sup> describes a case of diabetic coma with a CO<sub>2</sub> of 7 volumes per cent who, nevertheless, had no diacetic acid or acetone in the urine. He discusses as possible causes for such a condition (a) the dehydration with accompanying decrease in the total base of the body, (b) the excretion of all the ketones as B-hydroxybutyric acid rather than as diacetic acid or acetone and (c) pathologic changes in the kidney which may impair the excretion of ketones. Labb  e<sup>9</sup> likewise has called attention to the possibility of diabetic coma with a negative test for diacetic acid in the urine.

4 Case No 12270, female, 33 years of age was admitted in a profoundly unconscious state on November 5, 1933. She had had "hard breathing" for 32 hours and had been unconscious for 16 hours. Diabetes had not been diagnosed until the day of admission. At first no blood pressure estimation was possible, later at a time of temporary improvement values of 58 to 66 mm were recorded. The initial blood sugar was 0.64 per cent and the CO<sub>2</sub> combining power was 18 volumes per cent. With the use of 400 units of insulin there was chemical improvement and temporary clinical improvement. She rallied very little, however, then failed and died 5 hours

TABLE V  
CAUSES OF DEATH IN 61 CASES DURING OR FOLLOWING  
COMA (1923-1934)

Causes of Death	35 Fatal Coma Cases	26 Cases Dying After N E D H Dis- charge Following Recovery from Coma
Uncomplicated coma	11	5
Sepsis and metastatic infection	8	0
Gangrene	0	2
Cardiovascular disease	1	7
Cerebral hemorrhage	2	0
Pneumonia	7	1
Acute infections	0	3
Acute pancreatitis	3	0
Cancer	0	3
Syphilis	1	0
Tuberculosis	0	4
Hyperthyroidism	1	0
Toxemia from burns	1	0
Hypoglycemia	0	1

uary 1, 1934 of the 161 living coma cases who developed diabetes prior to that date is already 6.5 years.

Of the 6 deaths reported now, 4 were in patients who were admitted to the hospital in extremis (7690, 11920, 12139, 12270). All 4 were unconscious or very nearly so, all had extremely low blood pressures, all were greatly dehydrated, and all secreted very little or no urine during the period of observation. Despite the use of very large doses of insulin and energetic measures to combat the condition of shock, little or no clinical improvement was seen and these patients died in from 4 to 13 hours after admission. The case histories follow in brief below.

1 Case No 7690, female, 36 years of age with onset of diabetes in June, 1927, was admitted to the New England Deaconess Hospital on March 20, 1933 in an almost moribund state, having been totally unconscious for 12 or 13 hours. The blood sugar was 1.04 per cent and the CO<sub>2</sub> combining power, 2 volumes per cent. Despite 780 units of insulin given in the 7 hours after admission, the blood sugar fell only to 0.75 per cent and the CO<sub>2</sub> combining power rose only to 7 volumes per cent. The blood pressure which on admission was 42 mm systolic (obtained by palpation) never rose above 70 mm. The output of urine became less and less. Salt solu-

after admission. At autopsy there was bilateral congestion of the lungs and a septic infarct of the left lung. Death was thought to be due nevertheless to the diabetic coma.

These four deaths illustrate well the hazard of unrecognized and untreated diabetes, of prolonged unconsciousness before the institution of treatment, and the poor prognosis which must be attached to a low blood pressure particularly if it fails to rise or falls despite supportive measures. It is possible that in certain cases of this sort blood transfusion might prove of value if given early enough.

Of the 2 other fatal cases of the present series one was much like the 4 cases just described. This patient Case No. 11531 male 38 years of age, was brought to the hospital on December 3 1932 with a blood sugar of 0.50 per cent, CO<sub>2</sub> combining power of 7 volumes per cent, and non protein nitrogen of 28 mgm per cent. With 403 units of insulin during the first 24 hours he improved both clinically and chemically. On the morning after admission he became anuric and the blood non protein nitrogen began to rise. The blood pressure fell twitting of the hands and facial muscles appeared and the patient gradually failed and died in uremia about 50 hours after admission. The blood sugar was normal at the time of death. At autopsy bronchopneumonia of the left lower lobe of the lung was found.

Case No. 2786 female, was 41 years of age in July 1932 at the time of onset of diabetes. She was admitted to the hospital on January 31 1934. Three days before she had suddenly developed a sore throat. On the day of admission she had vomited repeatedly. The initial urine specimen showed 6.4 per cent sugar but the test for diacetic acid was negative. The insulin dosage given her in the next 24 hours proved to be inadequate in view of her infection. On the evening of the day following admission she showed unmistakable signs of diabetic coma and the diagnosis was confirmed by laboratory tests. With extra insulin and supportive measures there were satisfactory chemical improvement and excellent control of the diabetic condition but death took place 5 days after admission with pneumonia at both lung bases. No autopsy was obtained but the diagnosis was confirmed by roentgenogram.

It has been stated that of the 193 cases who left the hospital after recovery from coma, 26 have since died, including 8 cases since the last report. It is worth while to discuss further these 8 cases. Case No. 3078 female, aged 23 years, died at the New England Deaconess Hospital of pneumococcal meningitis following left otitis media. For months she had had pyelonephritis and had had several exacerbations of the kidney infection during which she was extremely ill. At the time of death her diabetes was of 11 years' duration (almost half of her life) and for the most part had been uncontrolled. Case No. 3750 died at the age of 39 of pulmonary tuberculosis with diabetes of 10.5 years' duration. A second death from pulmonary tuberculosis was that of Case No. 7486 who had diabetic coma when first seen in January 1929 the diabetes was of 11 years' duration at the time of

death. Case No. 4171, aged 75 years, died of heart disease 8 years after she had recovered from an attack of diabetic coma, the total duration of diabetes was 9 years. Case No. 6511 died of carcinoma of the breast at 55 years of age, 7 years after onset of diabetes. Case No. 8395, aged 51 years, broke diet, became lax in treatment and died at home in coma. Diabetes was of 7.3 years' duration. Since the previous report Case No. 6770 our oldest patient to recover from coma (72.6 years of age at the time) has died of coronary thrombosis. She was 77.3 years old at death. Case No. 7465 with diabetes of over 9 years' duration died of congestive heart failure at the age of about 56 years.

In studying 245 cases of pulmonary tuberculosis in diabetics, among the coma cases Root<sup>10</sup> found that 8 per cent developed tuberculosis within 3 years after recovery from coma. The effect of the metabolic disturbance in coma upon a chronic infection or the susceptibility to tuberculosis again emphasizes the tragic character of this complication.

**Clinical Features** For a discussion of clinical features the reader is referred to previous reports<sup>1</sup>. Almost invariable accompaniments of full blown diabetic coma are the nausea, vomiting and abdominal pain. McKittrick<sup>11</sup> in a recent article discusses from the surgical standpoint the differential diagnosis and treatment of a diabetic patient with such symptoms. It is well to recognize that a patient with diabetic coma may also have acute appendicitis and such rare cases should not be overlooked, but it is regrettable to have operated when the symptoms were due entirely to the acidosis.

Faulkner and Hamilton<sup>12</sup> studied in 15 cases the electrocardiographic changes which may take place in diabetic coma. Their surprising finding was that such changes were relatively slight and infrequent. On the other hand Klineenberg<sup>13</sup> reported that only 1 patient out of 10 admitted for diabetic coma had a normal electrocardiogram.

**Etiology** That the chief causes for the precipitation of coma are preventable is well shown in table VI.

TABLE VI

## ETIOLOGY OF DIABETIC COMA

1 Inadequate treatment (Breaking diet, too little or no insulin etc.)	23
2 Infections	11
3 Undiagnosed or recently discovered diabetes	12
4 Cause not apparent (in most instances probably diet breaking or inadequate insulin dosage)	9

55 Cases

Breaking diet or dropping of insulin or both still remain the commonest causes for coma. As far as the present series is concerned, table VII would seem to indicate that the patients followed treatment very well during the first year but after that showed increased laxity. Coma was most common in the period from 2 to 6 years after the onset of diabetes.

TABLE VII

DURATION OF DIABETES PRIOR TO COMA IN 55 CASES

Duration Diabetes Years	Number of Cases of Coma	Duration Diabetes Years	Number of Cases of Coma
0 1	14	6-7	4
1 2	1	7 8	1
2 3	8	8 9	4
3 4	6	9 10	1
4 5	4	10 15	3
5 6	8	15 20	1

This demands that education of the patient must not stop with the initial contact but that it must be a continuous process. The diabetic patient must be made to realize the value of careful treatment and encouraged to assume responsibility for himself.

There was a strikingly large number of patients with diabetes which had not been recognized or treated until the onset of symptoms of acidosis. The 12 such cases represent 22 per cent of the total. These cases represent a difficult group and it is only by education and stimulation of the interest of physicians and laity alike to the importance of early recognition of the disease that progress can be made. As is mentioned elsewhere, 3 of the fatal cases in the present series were from this group of 12 cases in which the diabetic condition was recognized only after the onset of coma. These three patients were then brought for treatment in a condition which proved to be hopeless. On the other hand 40 per cent had received treatment before admission and this is a far larger percentage than ever before and shows how knowledge of the disease and its treatment with insulin are spreading.

Of the 11 cases in which infections probably played a large part in causing the acidosis, there were 3 instances of upper respiratory tract infections, 2 of pneumonia, 2 of abscesses of the thigh, 2 of urinary tract infection, one of acute hepatitis and one of pulmonary tuberculosis.

In two cases (7735 and 11033) the patients had given up medical treatment and taken up Christian Science. Diabetic coma was the result. Fortunately both patients recovered and one (11033) has since been delivered by Cesarean section of a healthy, living child.

*Complications.* The present series is instructive particularly because of the complications. It has been stated that several patients had

high values for blood non-protein nitrogen and 5 of the fatal cases were anuric in the few hours preceding death. Three patients had pneumonia (2786, 11531, and 6920), the first two died case No 2786 because of the quickly overpowering infection, and Case No 11531 with uremia. Case No 6533 had a prolonged course of acute hepatitis with coma developing in the hospital, and Case No 10550 had toxic hepatitis apparently secondary to acute pharyngitis, both cases recovered. Case No 12751 was pregnant when seen in coma in May, 1934 and in August was delivered of a healthy baby. When Case No 7047, aged 16 8 years, was admitted in profound coma the temperature of 101 8° F suggested some complication. Return to consciousness was slow and after recovery from the extreme acidosis the fever persisted. This was found to be contributed to by a left otitis media but due mainly to acute bilateral pulmonary tuberculosis. She was transferred to a sanitarium where now, five months after the attack of coma, she remains in a critical condition.

*Treatment.* Our present treatment may be summarized as follows:

(1) *Preparation Prior to Hospital Admission.* A patient in diabetic coma deserves to be in a hospital where every facility is afforded for constant observation, uninterrupted treatment including the giving of parenteral fluids, and as frequent analyses of the blood and urine as may be necessary. If one learns by telephone that a patient at home is to be brought to the hospital, a preliminary dose of 20 to 80 units of insulin given by the home physician may be advised provided the diagnosis seems certain. A bed at the hospital should be prepared and necessary equipment as blankets, hot water bottles, stomach and rectal tubes, salt and glucose solutions, insulin, and stimulants assembled so that when the patient arrives no time need be lost in instituting treatment.

(2) *Insulin.* On admission after the diagnosis has been verified by history, physical examination and examination of the urine, a preliminary dose of insulin of usually 20 to 100 units is given subcutaneously. This dose must be varied to suit the age of the patient, the degree of acidosis, and previous insulin administration. Occasionally, when acidosis is extreme or when there is circulatory collapse, an initial dose of 50 to 100 units of insulin may be given intravenously in addition to that given subcutaneously. Provided acidosis is marked enough and the blood sugar high enough, a dose of insulin similar in size to the initial dose may be given every half-hour until there is clinical and chemical evidence of improvement. Urine specimens are then secured at intervals of one or two hours with instructions to give insulin according to Benedict's test, for example, 20 units for a

red or orange test, 15 for a yellow, and 10 for a yellow green test. This dosage, too, must be varied depending on the severity of the acidosis, the age of the patient, and the response to treatment. Unless absolutely forced to do so we prefer not to catheterize patients for fear of resulting infection. Rather we make frequent blood sugar estimations (capillary blood may be conveniently used) as a guide to treatment if urine specimens cannot be secured.

(3) *Fluids* One of the most striking clinical features of diabetic coma is the dehydration. The skin is dry and inelastic, the tongue and mucous membranes of the mouth are parched, the eyeballs are soft, and the subcutaneous tissues are obviously depleted of fluid. Atchley<sup>14</sup> and coworkers in a study of two diabetic patients with experimental acidosis have demonstrated this loss of intra and extracellular body water and electrolytes which occurs following the withdrawal of insulin therapy and the reversal of the process when insulin is resumed.

Treatment must have, then as one of the primary aims, the restoration of fluid and electrolytes to the body. This is best done by the subcutaneous administration (by gravity) of 1000 to 1500 cc. of normal salt solution within the first hour. If required, an infusion of 500 to 750 cc. of salt solution may be given intravenously later and indeed, a second or third subcutaneous infusion of 1000 to 1500 cc. may also be necessary within the first few hours. We have never observed embarrassment of the heart to follow even such liberal quantities of infusions. All solutions should be slightly above body temperature, and should be given slowly and with great caution to avoid infection or unnecessary trauma. Following a cleansing enema, salt solution may at times be given rectally with success. After gastric lavage usually fluids as broths, orange juice, or ginger ale may be given cautiously by mouth. Usually it is preferable to wait perhaps an hour after gastric lavage and then begin by limiting such fluids to 100 cc. per hour.

(4) *Gastric lavage* should be carried out routinely unless the patient is in extremis or in such condition that the procedure involved would be dangerous. Usually one's efforts will be rewarded by finding the stomach filled with sizable quantities of fluid, food remains, and old blood. Removal of such contents and gentle lavage with warm water or normal salt solution relieves the abdominal distress, stops vomiting, and prepares the way for the early administration of fluids by mouth.

(5) *Circulatory stimulants* are practically never needed with children and in adults rarely produce startling or lasting results. Adrenalin in doses of 0.3 to 1.0 cc. may be given subcutaneously for extreme collapse. Ephedrine gives a more prolonged effect in raising blood pressure

and may be given subcutaneously in doses of 0.5 to 1.0 cc. (25-50 mgm.). Either adrenalin or ephedrine may be given intravenously in emergencies but usually if the situation is grave enough to warrant such medication, the prognosis is bad.

(6) *Blood transfusion* was done in 2 of the cases (6803 and 7047) in the present series and both of these recovered. A false impression might be gained from this statement were it not realized that both these patients were young and that particularly in Case No 6803, considerable improvement was noted just before the transfusion was begun. In former years occasional transfusions had been carried out in selected cases at the Deaconess Hospital and then, as now, it has always been extremely difficult to evaluate the benefit derived and to know whether or not the result obtained was influenced by the transfusion or by other factors. Sheppe<sup>15</sup> has recently reported good results from the use of transfusion in coma cases.

Peters, Kydd and Eisenman<sup>16</sup> state that the concentration of the blood seen in diabetic acidosis is due not only to the loss of fluid from the body but also to the loss of fluid from the blood vessels into the tissues. They believe that when, despite the usual treatment, improvement in the clinical condition does not take place the blood pressure remains low, and the condition of shock continues, blood transfusion may be of great value in aiding restoration of blood volume. They employed blood transfusion in 9 cases of whom 4 died.

(7) *Food* Usually glucose is not added to the subcutaneous or intravenous infusions used at the outset of treatment. However, such treatment may be of value if the blood sugar is relatively low and the acidosis relatively great. Very early we begin giving orange juice and ginger ale by mouth and try to provide an intake of at least 100 Gm. of carbohydrate during the first 24 hours of treatment.

(8) *A cleansing enema* is routinely given.

(9) *Alkalies* are not used. Experience has amply shown that alkalies are needless and if given in quantities necessary for effectiveness in a purely chemical sense, may be actually harmful. It is of interest that in a recent article Kydd<sup>17</sup> has lent support to the opinion that without alkalies, treatment with insulin fluids, sodium chloride and carbohydrate suffices to provide for recovery from diabetic acidosis and eventual restoration of body electrolytes.

*Circulatory Collapse* Because of its importance a further word may well be said regarding the treatment of profound shock characterized by a blood pressure below 90 mm. of mercury (at times too low to measure), rapid pulse and eventual anuria. This state is not limited to older patients and may be seen in advanced coma at any age. One must agree with Lunde<sup>18</sup>

regarding the poor prognosis which attends such a case. On the other hand, we have seen unexpected recovery in a pulseless patient of 70 years treated with the methods outlined above. In this series Case Nos. 6803, 7047 and 10970 had blood pressures from 0 to 80 mm. but made good recoveries. Lawrence<sup>19</sup> has reported the use of gum acacia solutions and large amounts (4 to over 5 liters) of salt solution, both physiologic and hypertonic, intravenously to raise the blood pressure and counteract dehydration. Ralli and Waterhouse<sup>20</sup> stress the importance of large amounts of fluid. Labb   and Boulin<sup>21</sup> hold that the use intravenously of adrenalin 1 mgm. in 500 cc of normal salt solution is of great value. Bertram<sup>22</sup> uses various circulatory stimulants including strophanthin, cardiazol, hexeton, coramin, strychnine, caffeine, and sympathol. In marked collapse he recommends the careful use of a constant intravenous solution of sympathol or adrenalin. We shall continue to use during the first 24 hours normal salt solution in amounts from 3 to 5 or more liters administered subcutaneously and intravenously in addition to fluids by mouth and by rectum. When indicated this will be supplemented by adrenalin or ephedrine subcutaneously or intravenously. The use of transfusion of whole blood will also be given further trial in cases with low blood pressure as under 70 mm. of mercury.

*Hypertonic Salt Solution in Anuria.* The present series of cases illustrates well that death from diabetic coma may be attended by anuria developing six to twelve hours before death. In the aged such anuria may be due to chronic nephritis but in the young it may be due to renal block caused by the acidosis. The repeated vomiting of coma may have so reduced the chloride of the plasma that urinary secretion ceases. Even when salt solution has been given subcutaneously, an analysis of the plasma chloride may show a low value. In 3 cases reported by Root<sup>23</sup> the injection of 50 cc to 130 cc of 10 per cent salt solution intravenously induced urination and relieved dangerous nitrogen retention. We did not fully appreciate this value of hypertonic salt solution in such cases until recently and did not use it in the coma cases reported in the present paper.

*Summary.* 1 Among 276 consecutive cases of diabetic coma in 228 patients, there were 35 deaths representing a case mortality of 12.7 per cent.

2 Of the 276 cases, 128 were in patients under 20 years of age and among these there were only 3 deaths, a case mortality of 2.8 per cent. In the entire series there has been only one death in a patient under 15 years of age and in the group of 55 cases now reported for the first time there were no deaths in patients under 30 years of age.

3 Among the 55 cases now reported there were 6 deaths, a case mortality of 10.9 per cent. Four of the 6 deaths were in patients (adults) who were admitted in profound shock after long periods of unconsciousness and who died within 4 to 13 hours after admission.

4 In 40 per cent of these 55 cases, treatment with an initial dose of insulin had been started, usually by the family physician, before the patient was brought to the hospital.

5 The 35 deaths from diabetic coma from May, 1923 to October, 1934 represent 11.4 per cent of the 306 total diabetic (hospital) deaths during this period.

6 In the entire series of 276 cases there were 10 cases with an initial blood sugar value of 1 per cent or above. Of these, 6 recovered and 4 died.

7 Circulatory collapse with a low blood pressure which fails to rise with the usual treatment indicates a poor prognosis. In such cases transfusions of whole blood may be considered in addition to the parenteral administration of large quantities of physiological salt solution and circulatory stimulants as adrenalin and ephedrine. In cases of anuria or oliguria with a low plasma chloride, the intravenous injection of hypertonic (10 per cent) salt solution may be of great value.

8 An attack of diabetic coma means a physical insult to the patient, particularly in that he is more prone to develop pulmonary tuberculosis, subsequently, as well as an economic loss to him and the hospital. Chronic offenders present a great problem.

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## IODO BISMUTHATE OF QUININE IN THE TREATMENT OF SYPHILIS\*

BY E. LAWRENCE OLIVER, M.D. † AND G. MARSHALL CRAWFORD, M.D. ‡

THE use of bismuth in the treatment of syphilis was introduced by Sazerac and Levaditi<sup>1</sup> from the Pasteur Institute in 1921. Next to the discovery of the use of the arsenobenzenes by Ehrlich in 1909 this has been without doubt the most valuable contribution to syphilitological therapeutics. Its superiority over mercury has been amply proved and its use where the arsenicals are contraindicated has prolonged many lives. Some workers have gone even so far as to put its value above that of the arsphenamines such as Fournier at the Hôpital Cochin in Paris. In 1930 Levaditi<sup>2</sup> stated that after thirteen years studying the use of bismuth in syphilis, he found that its only point of inferiority to the arsenobenzenes lay in the more rapid disappearance of treponema of open specific lesions with the use of the latter, due to its quicker absorption through intravenous administration. "For all other purposes bismuth is superior to arsphenamine. Of equal curative value sometimes even superior, bismuth has the inestimable advantage over arsphenamine of not exposing the patient to any very serious risks. Of course this holds good only if one follows the exclusive use of insoluble or fat soluble (soluble in oil) bismuth compounds and the use of suitable posology." American investigators have not gone so far as the French in their advocacy of bismuth over arsphenamine but its place in the treatment of syphilis is firmly implanted, as is evidenced by the management of the subject in all of the modern textbooks.

The number of bismuth products that are available have flooded the market in recent years, some forty odd having been brought forward. Probably the most complete classification

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will be found in the work of Schamberg and Wright<sup>3</sup>. Manifold papers acclaiming the attributes of various types of preparations have appeared. Most writers agree that the insoluble products, suspended in oil, give the best results with least pain and fewest complications. Among the more recent considerations of the subject are those of Beckman<sup>4</sup>, Alderson and Ayres<sup>5</sup> and Harrington<sup>6</sup>. Which type or product will be found in a final analysis to be of the most value can only be determined by amassing all available statistics. To that end we are presenting some facts of interest.

The present study concerns the use of two of the insoluble bismuth salts in oil suspension—iodo-bismuthate of quinine and the more widely known bismuth salicylate. Fournier and Guenot (the first collaborators of Levaditi after his introduction of bismuth with Sazerac) brought out the iodoquinic salts of bismuth in 1921-1922 namely iodo-bismuthate of quinine (hereafter referred to as IBQ). This is the so-called "quinospirool" of Levaditi, who says, "From the first trials it was noted that this preparation suspended in oil—was endowed with remarkable curative properties and was perfectly tolerated by patients on intramuscular injection." Since that time there has been very little written about the use of this particular compound. It has been used to considerable extent, however in various parts of this country and abroad especially in France<sup>7</sup>. Laubry and Bordet<sup>8</sup> advocated its use in the treatment of cardiovascular syphilis especially where they found as much and as rapid improvement as in cases treated with arsenobenzenes. Symptomatic relief was particularly noticeable. This preparation was less painful and did not cause stomatitis as readily as previous salts of bismuth in their hands.

Its use at the Massachusetts General Hospital was begun in 1925 and continued until 1932 when bismuth salicylate was substituted in the

stiffness persisting in the hip after treatment. In this respect it was found that forty-four cases (57.9 per cent) in the salicylate series were so affected whereas but fourteen (18.4 per cent) of the IBQ cases were so bothered—less than one-third as many. All injections were given by the same technician throughout. During the first half of the IBQ series the 0.2 gram dose was given in a dilution of 4 cc of oil, in the second half it was given in only 2 cc of oil—no subjective difference being complained of. It is worthy of additional mention that since these series have been finished we have had trouble with some of the IBQ cases in getting them to take a course of the salicylate later. Four of such have had severe enough local reactions to preclude the further use of bismuth salicylate, two were incapacitated for several days.

Still more interesting from the angle of the patients' personal comfort is the tabulation of results in the series of one hundred and eighteen cases which had in the past received a course of both of these types of bismuth. Here again the IBQ was found to have caused far fewer complications of any sort. Less than one-fourth as many had had pain with IBQ as with bismuth salicylate, e.g., four and eighteen cases respectively, an additional fifteen complained of this with both types of drug. With the exception of one case of jaundice all other complications were found only with the salicylate. These are clearly indicated in table 2 and need no further amplification. It is significant here again, however, that five of the cases having trouble during the treatments with bismuth salicylate were found to have been incapacitated for two days or longer.

#### SUMMARY AND CONCLUSIONS

1. Two parallel series, each consisting of seventy-six cases of uncomplicated syphilis were

compared in regard to the results obtained with the use of two of the insoluble bismuth compounds.

2. The results as tabulated suggest that iodo-bismuthate of quinine, in spite of its lower bismuth content, is superior to bismuth salicylate.

3. An additional series of one hundred and eighteen cases which had in the past received both types of bismuth were studied from the angle of complications occurring during treatment. These cases were found to substantiate the results obtained in the present series, in that iodo-bismuthate of quinine produced a markedly smaller number of unfortunate incidents.

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## WHAT WE HAVE LEARNED FROM ONE HUNDRED INTRAPLEURAL PNEUMOLYSSES\*

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THE most one may expect to accomplish by pneumolysis is to enhance the degree of lung collapse produced by artificial inflation of the pleural cavity when that collapse is insufficient to accomplish the intended effect because retarded by pleural adhesions, and occasionally to relieve pain or distress resulting from tension of adhesive bands.

In 1932 and 1933 there were seven hundred and fifty admissions to the Rutland State Sanatorium

In that period 314, or 41.8 per cent, were advised to have artificial pneumothorax. In 84 pneumothorax was not possible. Pneumothorax was performed on 230, or 26.5 per cent, patients admitted during that period. As approximately as could be determined, of 120 patients subjected to pneumothorax who were admitted during 1933, 80, or 66 per cent, have had pneumolysis performed. It is conservative to state that in over half of the cases of pneumothorax, pneumolysis is indicated.

Cutler<sup>1</sup> remarks "Of all forms of treatment in pulmonary tuberculosis, therapeutic or artificial pneumothorax occupies an increasingly

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important position and today it is practiced in approximately 50 per cent of all cases of tuberculosis."

Matson<sup>2</sup> states, "Pleuritic adhesions cause more failures in pneumothorax than any other complication, forty per cent of its failures being caused by such adhesions interfering with satisfactory collapse or compression of the lung. Further, "Intrapleural pneumolysis under thoracoscopic guidance will convert seventy per cent of the unsatisfactory type of pneumothorax into satisfactory ones."

Variation in type of pulmonary cases admitted in different institutions obviously accounts for a slight variance in the experience of different observers as to frequency of indication for collapse measures of any sort. However, it must be apparent to any student of pulmonary disease that adhesive pleurisy is an important factor to be reckoned with. It will be apparent then, that although the field of pneumolysis is restricted it is by no means a negligible one.

During the period from October 31, 1932 to January 15, 1934 inclusive, we performed 103 thoracoscopies with intent to sever pleural adhesions, at the Rutland State Sanatorium. In three, it was deemed unsafe or otherwise impossible to cut adhesions, two of these patients were later subjected to thoracoplasty at the Massachusetts General Hospital with improvement. One who had had pneumolysis performed previously, at which time only a portion of the adhesions could be dealt with, was again subjected to a trial but no further cutting was considered safe. In the remainder the adhesions were severed and they constitute our first one hundred intrapleural pneumolyses done at the above institution. While they were not strictly consecutive, we having operated similarly at other institutions, they were so far as the sanatorium is concerned, and are within our first one hundred and twenty five operations of this type.

While not a large series of operations, one hundred is a sufficient number when subjected to study, to indicate certain facts regarding the usefulness of the procedure, to emphasize the importance of certain sequelae, and from which useful conclusions may be drawn.

**SEX.**—Fifty six of the one hundred operations were upon female patients and forty four upon males. The sexes of the patients in the institution are about evenly divided.

**AGE.**—The youngest patient was seventeen, the oldest forty three. Thirteen were aged from seventeen to twenty, sixty six from twenty-one to thirty, twenty from thirty-one to forty, and but one over forty.

**STAGE OF DISEASE.**—Six were recorded as "Stage I," fifty as "Stage II," and forty four as "Stage III."

The general condition of the patient was recorded as "good" in forty three, "fair" in forty seven, and "poor" in ten.

The sputum before operation was positive to tubercle bacilli in seventy seven, negative in twenty, and not stated in three. After operation it was positive in twenty two, negative in seventy seven, and not stated in one. The amount of sputum was decreased after operation in sixty four, increased in five, not changed in twenty five, and the record not clear in six. Before the operation the sputum was scanty or absent in twenty six, after operation in fifty-six.

The apparent onset of symptoms of the disease as noted in the records was within the period between 1920 and 1929 inclusive in twenty two, from 1930 to 1933 inclusive in seventy-eight.

**INTERVAL.**—The period between beginning therapeutic pneumothorax and the performance of pneumolysis averaged one hundred and ninety eight days (slightly over six months). Inasmuch as there are included in the series several cases that had been resident in the sanatorium and under pneumothorax treatment for considerable periods when the earlier pneumolyses were done, this figure cannot be accepted as the average for the present time, which is probably considerably less than six months. As to how long one should wait after pneumothorax is instituted before performing pneumolysis, can not be arbitrarily stated. The probability of a satisfactory therapeutic result with the collapse already obtained, the character and number of adhesions and whether they may be expected to relax to a degree permitting collapse of actively diseased tissue and closure of cavities that may be present, extent of disease reaction to pneumothorax, general condition of the patient and many other factors are to be considered. However, it is our inclination to doubt the wisdom of long-continued efforts to stretch adhesions, running into periods of many months, especially with positive manometric readings. It is our opinion that, under these circumstances, the danger of inducing bronchopleural fistula with its serious results is not inconsiderable. On the other hand, the mere presence of adhesions is not an invariable indication for action and time should of course elapse sufficient to observe and evaluate any reaction to inflation and note any improvement that may result from the partial collapse.

All adhesions present were severed in forty-seven pneumolyses. This was impractical in fifty three. The principal reason for not completing pneumolysis at one sitting was the presence of areas of close adherence between the visceral and parietal pleurae. Other reasons were vascular supply, poor visibility, fatigue of patient, and inadvisability of unduly prolonging operation.

Complete severance of all adhesions may not be necessary for satisfactory collapse, but often we may be obliged to content ourselves with improved collapse. Frequently short bands, or close adhesion, left after partial pneumolysis may become stretched sufficiently to be successfully dealt with at a later operation, after improved pneumothorax. A perfectly efficient collapse may result even though a few adhesions remain.

The immediate convalescence was absolutely uneventful in twenty-eight cases. Postoperative fever of 101 degrees Fahrenheit, or over, occurred in twelve. This usually was transient, resuming normal in from one day to one week. Dyspnea was noted in five cases, one of which was accompanied by cyanosis. Tachycardia occurred twice. Cough was markedly increased for a time in one case. Pain in the chest, shoulder, arm, or back occurred postoperatively in nine. One patient developed a transient generalized jaundice. There was one case of hydro-pneumothorax. Faintness and dizziness were complained of in three instances and nausea in eight, resulting in vomiting in three.

Of immediate untoward sequelae of operation, the most important is bleeding. This usually results from severed vessels in the adhesion itself, the blood escaping usually from the parietal segment or from injury to intercostal vessels. It is possible to injure an intercostal vessel while introducing the trocar resulting in escape of blood into the pleural cavity.

We encountered considerable bleeding in one case, moderate bleeding in two cases, slight negligible bleeding in two or three cases. We met with no hemorrhage that could not be controlled by application of dull cautery or electrocoagulation. However, one can readily conceive of serious hemorrhage unexpectedly occurring and meticulous care should be taken to avoid it. Any adhesion appearing vascular should either be coagulated before cutting or avoided altogether, and facilities should be at hand at all times for dealing with hemorrhage. In its presence, one should work rapidly, but positively, and with presence of mind in order that it may be under control before the field of vision may become obscured by blood. Judgment and apprehension should attend the severance of thick or close adhesions. Hemorrhage from vessels not accessible to ligation may cause any surgeon concern wherever encountered.

Emphysema of the tissues about the wound occurred in forty-two instances. It was slight in fifteen, moderate in sixteen and considerable in eleven instances. Among the latter were some where crepitation was noted on both sides of the chest and neck and in one it was general over the trunk, extending down to the groins. Several times escape of air threatened loss of collapse. This actually occurred, completely, in four instances, partially in four others and once

it became complete six months after operation. We believe this misfortune should happen less frequently in the future. Experience has taught us a better closure of the trocar wounds and the desirability of early fluoroscopy and when indicated, prompt and if necessary, frequent refills. Emphysema was invariably evanescent and inconsequential except in so far as accompanied by threatened or actual loss of collapse.

Fluid appeared in the pleural cavity, as shown by x-ray, either quite promptly or some time after operation in fifty-two instances. The amount was recorded as "slight" in sixteen, "moderate" in thirty-one, and "considerable" in five. It was known to be bloody in a few cases and it was recorded as present before operation in three.

**EMPYEMA.**—Included in the above were seven pleural effusions which became purulent. Usually empyema was a later development of, or following, surgical procedure, but in a few it occurred rather promptly. It is an important and unpleasant sequel, although not invariably incompatible with ultimate recovery. It has usually occurred, in our experience, in otherwise bad cases. Some factors in its production probably are not within the surgeon's control. Selection of case, avoidance of bleeding, which might result in hemothorax, avoidance of release of infection by wounding the lung, and meticulous asepsis in technique of both operation and subsequent pneumothoraces, may be considered prophylactic measures to be observed. Of the seven, the sputum became negative to tubercle bacilli, or absent altogether, in five, and continued positive in two. Oleothorax, using gomenol oil, was done in three, with apparent noticeable improvement in two. The benefit in one was doubtful. In two empyemas, pleurocutaneous fistulae resulted. One patient, however, has at the time this is written, no cough or expectoration and has gained twenty pounds in weight, notwithstanding the fistula still present. Three of the seven have done poorly and the prognosis is bad. Two are doing well clinically and the prognosis is good. In two, while there is some evidence of improvement, the prognosis is problematical. Guinea-pig inoculation showed the presence of tubercle bacilli in the pus of all seven cases. Cultures indicated the presence of other pathogenic organisms in two and in one, with persisting pleurocutaneous fistula, mixed staphylococcus infection developed eventually.

**BILATERAL CASES.**—There were fourteen intrapleural pneumolyses done upon nine patients who were subjects of bilateral pneumothorax. In one patient, we severed adhesions twice in the left pleural cavity after a pneumolysis had been done, by another surgeon, on the right. The general condition of the patient prior to operation was recorded as good in only two,

fair in six and poor in one, the operation proving a life-saving measure in the latter. In this group are included some desperate cases whose future prospects were nil without successful collapse. The more radical measures were contraindicated and we felt that pneumolysis should be done regardless of the obvious fact that the general mortality rate of the operation might be unfavorably affected. Marked clinical improvement in four of the nine patients with some at least temporary if not permanent improvement in four others, surely justifies the one fatality. We are informed that one of these patients, a lad of seventeen has since succeeded in joining the United States Marines, of course unsanctioned by his medical advisers at the sanatorium.

**CLINICAL RESULTS.**—While from time to time we have encountered certain annoying sequelae of intrapleural pneumolysis, the importance of which we do not wish to minimize we are able to report eighty five per cent of the series as doing well at the time this is written. Marked improvement, obviously resulting from the procedure, occurred in fifty three. In thirty two others the patients are doing well either because of less striking benefit of operation or regardless of it. In fifteen it was evident that no benefit resulted and, of them seven were apparently made worse by the operation. In the latter number are included two followed by death within the period of six weeks. In neither was the prognosis at all good. One we consider an operative fatality. In evaluating the clinical results of pneumothorax, supplemented by pneumolysis, one should not lose sight of the bearing of disease in the contralateral lung on persistence of tubercle bacilli in the sputum or on the patient's prospects. Of course in some of the cases showing less striking improvement, this might have occurred had not operation been done, other than the imperfect pneumothorax. We sometimes wonder if we do not easily forget the good recoveries that not infrequently resulted from sanatorium régime when the treatment of pulmonary tuberculosis rested so gracefully upon that tripod whose three legs were rest, fresh air, and nourishing diet.

As to technique our present preference is for an electrocautery one, not however exclusively, for we consider it wise to coagulate before cutting certain obviously vascular adhesions and this is best done by means of the high frequency electrodes. We prefer for most cases the Jacobaeus-Unverricht instrument. Occasionally we have used the Cutler-Davidson jaw-electrode thoracoscope and while in some cases it is admirable, we do not find it always, in our hands, well adaptable. Rarely do we find cases in which there are multiple adhesions where all can be severed even if seen through a single cannula, without change of position of puncture. We have resorted to the use

of a second cannula. With this instrument, one is of course confined to the use of the high frequency current. The cabre of the instrument is slightly larger than the Unverricht and therefore because of larger incisions and punctures, more favorable to escape of the pleural air. Because of the facility with which bleeding points can be controlled and sometimes prevented by high frequency coagulation, we would not think of operating without an assortment of the electrodes at hand together with a suitable unit. There are several efficient electrosurgical outfits now upon the market, both tube and spark gap, or combined, at reasonable cost which are perfectly suitable for this work. The electrocautery and the high frequency knife both have their devotees. Those who become familiar with one or the other probably do best work with their choice and as Sir Berkeley Moynihan says, "Surgeons, also, wear their rue with a difference."

There are, however, two phases in the use of high frequency cutting instruments in this work that ought to be at least considered by those unaccustomed to them. First, while the cutting is done with great facility and this is pleasing and attractive a sudden motion on the part of patient or operator not anticipated, may bring the point of an active electrode in contact with tissues to which one may wish to avoid injury and unintentional solution of continuity result. Accidental injury is of course less likely with long experience with pleural endoscopy but experience involves many patients. Secondly it is our conviction that sloughs resulting from deep injury to tissues are more readily produced by high frequency than cautery electrodes.

John R. Caulk\*, attempting to prove the supremacy of the electrocautery to the high frequency loop in transurethral prostatic resection has in conjunction with Mr. Wilbur Harris in the Department of Surgery at Washington University, conducted a series of experiments using a standard thermocouple galvanometer. The thermocouple placed in the tissues at varying distances from the active electrodes, appeared to show that a much greater intensity of heat occurs within tissues in the path between the high frequency electrodes than occurs at similar distances in any direction from the cautery. One of Caulk's deductions was that "high frequency currents produce heat in tissues away from the site of actual burning, often beyond the thermal death point of the tissue; that cautery heat does not penetrate to such depths, its only heat resulting from conduction and is superficial." The principles governing high frequency cutting and coagulation are the same when applied to intrapleural or any other tissues as when applied to the prostate. It is not our purpose to condemn the use of the high frequency current for this work, but to emphasize its potential dangers that they may be kept in mind by those beginning its use. For

several years we have used the electrosurgical knife and surgical diathermy, where we considered it indicated, with satisfaction, and consider it admirable when not misapplied.

Some thoracic surgeons have found an accessory illuminating device whereby a small electric bulb may be carried through one of the Unverricht cannulae beneath and about adhesions during exploration, while at the same time looking through the thoracoscope, passed through another. The McCarthy foroblique telescope, which we have at hand as a part of the Cutler-Davidson instrument, serves this excellent function, with the additional advantage of a forward accessory view when desired. Being a delicate instrument, care is necessary to avoid breaking off the bulb or bending the shaft. Of course, it can not be used in conjunction with a curved cannula.

#### CASE REPORTS

A. S., aged twenty-four, male, salesman, Stage III. Disease—upper two thirds right, upper third left. General condition fair, no complications.

Onset catarrhal in March, 1930. Artificial pneumothorax started soon after admission January 22, 1932. April 26, 1932 pneumothorax started on opposite side. Failed to show improvement, collapse good on left, but unsatisfactory on right. Large cavity kept open by dense adhesions.

Prognosis Guarded.

January 16, 1933. Pneumolysis right, not completed.

February 3, 1933. Pneumolysis right, completed. After second operation, patient became dyspneic. Generalized emphysema. Dyspnea increased, fluid appeared. The second day, i.e., February 4, 1933, 1600 cc air aspirated. February 6, 1933 pressure positive. A large needle was left in second interspace anteriorly. There was perforation of the lung. The patient continued to get worse and died February 13, 1933.

The operation seemed to hasten death and the fatality should be charged to it, although the future of the patient was unpromising in any event.

No permission was secured for autopsy.

E. K., aged twenty-one, female, shoe worker, Stage III.

Onset of illness insidious December, 1929. Physical signs indicated disease in entire left and upper half of right lung. General condition poor. Complication, kidney disease. Raising one ounce positive sputum.

Prognosis Very poor.

Artificial pneumothorax was done on left side as a last resort measure. An unsatisfactory degree of collapse resulted and the patient was referred to me for thoracoscopy.

Operation September 25, 1933, left. A line of close adhesions to parietal pleura was found running around the apex of the lung. Web-like portions were released, but it was not possible to release the apex from chest wall. A thin walled cavity was obviously in immediate contact. Operating time thirty-six minutes.

After the operation, the patient complained of nausea and pain. Considerable subcutaneous emphysema. Escape of air necessitated the introduc-

tion of 300 cc of air to prevent complete expansion. A few days following, fluid appeared continuing to increase in amount. In October, severe attacks of dyspnea occurred accompanied by cyanosis and a feeling of tightness over the epigastrium. Pulse was 140 and upwards during these attacks and the fever became 102° and 103° Fahrenheit. She developed definite signs of peritonitis October 28, 1933, 500 cc of air was withdrawn. She died on October 30, 1933.

No autopsy was performed.

We do not consider this an operative fatality, but the case is detailed inasmuch as the death occurred within the subsequent six weeks.

One might question the wisdom of operating on cases of this gravity. In such conditions as diffuse peritonitis from ruptured septic appendix or of hollow viscera, although the patient's prospects are almost nil, no one doubts the justice of a trial of surgical intervention. We ought to apply the same reasoning to surgical methods of collapse of the lung in advanced phthisis, if there appears to be a remote chance Fortune will deal kindly with us once in a while in either case, but in neither ought surgery to be withheld until advanced disease supervenes. However, sometimes we do not have the privilege of early contacts.

We conclude that intrapleural pneumolysis is a valuable adjunct to therapeutic pneumothorax. It is a delicate procedure, requiring patience and gentleness in its performance. While continued experience enables one to avoid some of the unpleasant and untoward sequelae, occasional, if uncommon, disasters, notably empyema, will have to be reckoned with when using any of the present techniques.

I wish to express my thanks to Dr. Gabriel Nadeau of the Sanatorium Staff for searching and abstracting the records.

#### TUBERCLE BACILLI IN SPUTUM

	T B Pos	T B Neg	T B ?	Total
Before Pneumolysis	77	20	3	100
After Pneumolysis	22	77	1	100

#### CLINICAL RESULTS

Marked improvement	53
Others doing well	32
Not improved	15
Total	100
Made worse	7
Died as result of operation	1
Died within six weeks, not of operation	1

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**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANAT MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES**

EDITED BY RICHARD C CABOT, M.D.

CASE 21071

## PRESENTATION OF CASE

A fifty seven year old American housewife entered complaining of diarrhea.

Approximately nine months before entry she was seen at her home because of mucus and blood in her stools and diarrhea of about four months' duration. A rectal examination was not entirely satisfactory at that time but it was felt to be negative. She was not seen again until four months later at which time she reported one or two normal movements a day with a slight amount of mucus and occasional blood. A barium enema at that time showed an incompetent ileocecal valve and stasis in the colon which was smooth. She was put on bismuth and tincture of belladonna with no success. Examination of the blood two months later showed a red cell count of 4,000,000 with a hemoglobin of 65 per cent. The white cell count was 6,300. She was given a low roughage diet and iron. A proctoscopic examination at this time was said to be negative. Two months before entry an other proctoscopy showed an inflamed mucosa throughout the rectum with small red bleeding points. There was no evidence of malignancy. She went to bed the following day and was given iron and liver extract. The temperature was about 100° to 101°.

One week later she complained of nausea and vomiting. At that time she was admitted to an other hospital. Her stool examinations showed some mucus but no blood. No amebae or pathogenic organisms could be found. Her red cell count remained around 3,500,000 with a hemoglobin of 60 per cent. The white cell count ranged between 7,000 and 11,000. The tem perature remained slightly elevated. Her pulse remained around 120. The abdomen was somewhat spastic on the right side. She was given a high vitamin diet. She was discharged from the hospital after about two weeks. At home she felt somewhat better although she continued to have three or four stools a day. She con tinued to have a moderate degree of anemia and about ten days before entry she was given liver extract for a period of seven days. Dur ing this time the stools were reduced somewhat in number and were definitely formed rather than loose. She was also started on iron. The

evening before admission she developed nausea and the diarrhea became very severe.

A complete physical examination was not done at this time. Her abdomen was rather full, rounded and non tender the right side of the abdomen being rather more prominent than the left. Her general condition was poor.

The temperature was 101°, the pulse 120. The respirations were 20.

Examination of the blood showed a red cell count of 3,450,000 with a hemoglobin of 55 per cent. The white cell count was 5,500, 79 per cent polymorphonuclears. The stools continued to show blood and mucus but no amebae. A gastric analysis showed no free hydrochloric acid but a total acid of 5.

On the third day she was given a transfusion of 500 cubic centimeters. A barium enema showed no evidence of obstruction at any point. The walls of the colon were rigid and there was complete absence of haustral formation and of normal mucosal markings. The margins of the large bowel showed a saw tooth appearance.

She continued to receive Bland's pills, liver extract and Harris yeast. On the twenty fifth day an ileostomy was performed. She did very well for three or four days but then began to have nausea, vomiting some loss of appetite and elevation of pulse. She was transfused again and seemed to be getting along fairly well. About two weeks after operation she began to do poorly again. Two days later she developed abdominal discomfort and passed large quantities of blood through the ileostomy. No bleeding point could be observed and it was assumed that it came from the large bowel back through the short segment of ileum, between the ileostomy and the cecum. She failed rapidly that day and died early in the evening.

## DIFFERENTIAL DIAGNOSIS

DR. ARTHUR V. BOCK In contrast to Dr Miller's case\*, I think you will agree with me as this case is read, that the picture as given is indefinite and unsatisfactory. I get the impression that the people in charge of her never did get down to brass tacks in the study of the pa tient until at least the last event.

The first few lines of the present illness bring up the differential which has been discussed by Dr. Miller of ulcerative colitis amebic and bac illary dysentery. It does not say whether the patient has been out of New England but, whether or no, the diagnosis of ulcerative colitis, with this story of diarrhea mucus and blood, is the most likely.

Sometimes it is difficult to do a rectal exam ination especially if the anal canal is involved as it may be in ulcerative colitis.

\*She was not seen again until four months

later at which time she reported one or two normal movements a day with a slight amount of mucus and occasional blood." That suggests a remission of the underlying condition of ulcerative colitis which we know occurs in a great many cases of relatively low-grade type.

The appearance of the colon by x-ray is highly suggestive of the above mentioned diagnosis.

"She was put on bismuth and tincture of belladonna with no success." It is hard to judge what they mean by "success", because at that time she was having very little diarrhea.

With a diarrhea of only one or two bowel movements a day she appears to have been in an inactive state and proctoscopy might not have shown very much, although one might have expected evidence of healed ulcers. Active ulcerative colitis may occur without diarrhea. The history is lacking in that during the interval between proctoscopies there may have been an exacerbation of symptomatology.

The blood picture is one that is quite commonly found in any of the dysenteries, including ulcerative colitis. There is usually a hypochromic anemia but hyperchromia may occasionally occur.

"The abdomen was somewhat spastic on the right side." That is a finding not uncommonly found in cases of ulcerative colitis, presumably due to the tendency of the lesions to invade the wall of the colon.

I should think from the story that she was not kept in the hospital long enough, but that may have been a matter over which the doctors in charge had no control.

A complete physical examination is not recorded. We have no picture of what she looks like, no history of weight loss, no statement as to the appearance of her tongue.

The blood showed the same picture as previously.

If this were a case of amebic dysentery I should think they would have had little trouble in finding amebae. If one is uncertain of the diagnosis it may be useful to try the effect of a course of treatment with emetin.

In a great many cases of diarrhea, from any sort, we have either absent acid or very low acid in the stomach. It is not specific for any one of these conditions.

Much is left to the imagination in the description of this case but there is evidence of fairly long standing chronic disease which is characteristic of ulcerative colitis. It does not suggest sprue or any deficiency state.

I presume she died largely as a result of the effects of hemorrhage and presumably from ulcerative lesions of the colon. I find it very difficult with this type of picture to make a guess at anything besides ulcerative colitis.

#### X-RAY INTERPRETATION

DR GEORGE W HOLMES In these cases I think it is probably worthwhile to take a film of the chest because a certain number of the tuberculous types do show evidence of a lesion in the lungs. A positive finding in the lung would be of some help, a negative finding of no value.

These films show a rather large, active small bowel, and in the large bowel there is absence of haustral formation, no normal mucosa, a narrow spastic bowel. Those two films show the condition fairly well. One, with the colon filled, and one, after evacuation.

#### CLINICAL DISCUSSION

A PHYSICIAN The summary of the clinical record does not give a clear picture of this case especially as regards treatment. There was a long discussion as to whether we were dealing with true ulcerative colitis, which should be treated by ileostomy, or whether the condition was primarily a deficiency disease which could be cured by liver extract and high vitamin feeding.

DR BOCK I do not quite see the argument about the case. We know from observation of chronic ulcerative colitis that many of them show evidence of deficiency states. Dr C M Jones presented several cases three years ago. There is a discussion in one of the recent *American Medical Association Journals* about deficiency and ulcerative colitis. Occasionally there are eye changes, the tongue is a famous example of deficiency disease. Anemia of the hypochromic type is common. Occasionally there may be enough disturbance to produce nutritional edema. I should think that the proper method of therapy is to give a high-vitamin low-roughage diet, including the use of liver and iron, and to consider ileostomy early rather than late in the disease.

A PHYSICIAN One of the consultants said that he had seen colons just as bad as this cured on liver treatment, and I believe that in his opinion this was a primary deficiency disease with secondary changes in the colon.

DR THOMAS V URMY This was not an acutely ill case until about the time operation was done. It was a low grade, chronic affair about which at first, at least, there was some doubt as to whether a true colitis was present. Though it may seem to illustrate the usual bad results of too long postponement of ileostomy, I am not sure that in this particular case the termination would have been influenced by earlier operation.

#### CLINICAL DIAGNOSES

Ulcerative colitis  
Intestinal hemorrhage, ? perforation  
Ileostomy

## DR. ARLEE V BOCK'S DIAGNOSES

Ulcerative colitis  
Intestinal hemorrhage

## ANATOMIC DIAGNOSES

Colitis, chronic ulcerative  
Mesenteric thrombosis, venous.  
Operative wound, ileostomy  
Fatty vacuolization of liver  
Pancreatitis, chronic.  
Pulmonary emphysema, slight  
Pulmonary tuberculosis, healed, apical  
Pleuritis, chronic fibrous  
Arteriosclerosis slight aortic and coronary  
moderate cerebral  
Infarct of pons

## PATHOLOGIC DISCUSSION

DR. TRACY B MALLORY This patient entered this hospital only near the end of a protracted illness, in a condition which made a complete work up impossible. The history was pieced together from the scanty hospital records and the notes of one of the consultants who saw her from time to time. Unfortunately it fails to give an adequate picture of what was undoubtedly a difficult diagnostic problem in the early stages even though it became a very obvious one in the terminal period.

When she first sought medical attention with a history of only mild diarrhea, occasional traces of blood in the stools and a marked anemia it was a real question whether she was suffering from dietary deficiency with secondary bowel pathology or whether a primary bowel lesion was producing a secondary deficiency syndrome. Both combinations have been shown to be possible and in fact not infrequent. Several competent examiners felt that the blood smear at that time was strongly suggestive of pernicious anemia and a trial period of high vitamin and liver therapy was not unreasonable. Even if the diagnosis should eventually prove to be ulcerative colitis the case appeared to be sufficiently mild so that no great risk was involved in delaying ileostomy for a short period.

In the other two cases we have presented today we showed two extremes of ulcerative colitis—one dying in a few weeks from onset, the other persisting without very disabling symptoms for eight years until finally a superimposed carcinoma caused death. In cases of the first type, ileostomy can probably never be done too soon and in the latter type it may be definitely postponed. The case under discussion might fairly be considered as a combination of the two types, in which a sudden exacerbation of a mild lesion almost overnight shifted the picture to that of the fulminant type. It is the danger of such an exacerbation often coming when it is least expected, that makes

these cases so difficult to handle. In retrospect it is easy to say that ileostomy was postponed too long, but I doubt if any of us would have wished to urge it strongly upon a reluctant patient in the early stages of the disease.

The final terminal event, I have never seen before in a case of ulcerative colitis. It was an acute mesenteric thrombosis which involved the entire small bowel. The terminal hemorrhage was from infarcted small bowel, not from the colon, which showed a rather average grade of ulcerative colitis with shallow denudation of the mucosa everywhere but no deep ulcers that were in danger of perforating or producing hemorrhage. If this mesenteric thrombosis had not supervened the ileostomy would have been done in plenty of time.

DR. BOCK Why did she have mesenteric thrombosis?

DR. MALLORY I cannot answer that. Any one with infection anywhere in the bowel has a perfect right to have a spread of infection into the veins draining the bowels, but it certainly is very unusual.

DR. BOCK Why do we not see more of it in cases of ulcerative colitis then?

DR. MALLORY I do not know. We practically never see it.

## CASE 21072

## PRESENTATION OF CASE

A twenty seven year old single Canadian nurse entered complaining of diarrhea of five weeks' duration.

Five weeks before entry the patient began to have diarrhea characterized by six movements a day. At the onset she had no chills, fever, nausea or vomiting. She did not feel particularly sick for the first three weeks. Although she was not working at that time, she felt tired and run down and began to take yeast. Two weeks before entry she took a position in a store, but after working there awhile the diarrhea increased in severity. She developed fever and one evening had chills. She became nauseated but did not vomit. Her stools were never bloody but did contain a great deal of mucus. Five days before entry here she entered another hospital. She did not improve and had about seventeen bowel movements a day associated with much tenesmus. She continued to be nauseated and had anorexia. She also had generalized dull abdominal pain. Two weeks before entry she had difficulty in starting urination. This condition continued for one week. However she had no dysuria. Eight months before entry, following nervous breakdown which had kept her in bed for four months, she had arthritis which shifted from one joint to another without redness or swelling. This included the sternoclavicular

and temporomandibular joints. No specific treatment was given. She was in bed for five months.

Her family history and the rest of her past history are non-contributory.

Physical examination showed a well-developed and nourished, acutely ill woman. Her face was flushed. The heart and lungs were negative. The abdomen was moderately distended and showed increased tympany. There was no spasm, but there was increased peristalsis and tenderness in the right lower quadrant. The spleen was not felt. The blood pressure was 130/60.

The temperature was 103°, the pulse 112. The respirations were 24.

Examination of the urine showed a specific gravity of 1.020, 4 to 50 white blood cells, 2 red blood cells and numerous bacteria. The blood showed a red cell count of 3,930,000, with a hemoglobin of 60 per cent. The white cell count was 10,800, 71 per cent polymorphonuclears. Of thirty-five stool examinations fourteen showed positive guaiac tests. No amebae or pathogenic organisms were cultured.

Her temperature remained elevated. On the fifth day a proctoscopy showed in the small area examined a slightly edematous, granular mucous membrane, without ulceration. The mucus was increased in amount. There was, however, a 4 or 5 millimeter punched-out spot from which creamy pus exuded. Two days later moist râles were heard at both bases, associated with slight cough. Edema of her feet developed. On that same day an ileostomy was performed. Her condition remained about the same immediately following the operation, but on the second postoperative day her temperature began to rise, reaching 104°. Her abdomen remained distended. She was given intravenous fluids. The pulse rose to 160 and she went progressively downhill and died that day.

#### DIFFERENTIAL DIAGNOSIS

DR. E. PARKER HAYDEN. It seems to me that the history is pretty definitely that of an ulcerative colitis. It certainly is not a history of malignant disease, with the degree of fever which she had. As to just what happened at the last, one can only speculate.

Her discomfort was a little suggestive of obstructive pain, and the ileostomy could have been done for obstruction. It is much more likely, however, that she was diagnosed as a fulminating case of ulcerative colitis, resembling a very sick typhoid, and the ileostomy was done in an effort to head off the disease and possibly save her life.

I think it is quite possible that she may have had a little perforation which did not at first give her a general peritonitis but might have accounted for the distention, a slow perforation

Death may have been due to subsequent spread of infection, or may have been due to peritonitis originating from the ileostomy, either from the technical standpoint, or possibly due to the necessary handling of the bowel in doing the ileostomy. I should think that the history pointed pretty definitely to an acute ulcerative colitis and terminal peritonitis.

DR. JAMES H. TOWNSEND. I do not think that this story brings out the events immediately preceding her death. She did pretty well for two days after operation although she was toxic and had high fever and rapid pulse. Shortly after midnight on the day she died she rather suddenly became much worse. I saw her at about half past three that morning. When I came in the change in her condition was very striking. She was very much paler than she had been before. When I went to feel the abdomen I found the bed full of bright red blood, passed by rectum. There must have been at least two quarts in the bed. We started to get everything ready for a transfusion but she died before it could be arranged.

I have nothing else to add except that she was exceedingly sick from the very beginning and all the specific things seemed to be ruled out, such as typhoid, bacillary, and amebic dysentery. She had an acute fulminating form of ulcerative colitis. The immediate cause of her death was hemorrhage.

DR. THOMAS V. URMY. I think that she represents one of the relatively small group of very acute and severe colitis cases which in the great majority here have terminated fatally. In almost all of the cases the operation had been postponed too long and perforation with peritonitis had already occurred. We suspected it in this patient, even before ileostomy, because of the distention.

I remember one of these cases that came in near the onset, had ileostomy done at about two weeks, and did recover after a tremendously stormy period.

#### CLINICAL DIAGNOSES

Acute ulcerative colitis  
Hemorrhage from colon  
Nutritional edema.  
Bronchopneumonia

#### DR. E. PARKER HAYDEN'S DIAGNOSES

Acute ulcerative colitis  
Peritonitis

#### ANATOMIC DIAGNOSES

Acute ulcerative colitis  
Hemorrhage into large intestine  
Operative wound ileostomy  
Bronchopneumonia, right lower lobe  
Anemia, secondary

Pleuritis, chronic, left apex.

Leiomyomata uteri

Operative scar appendectomy

#### PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY This case as Dr Urmy said, fits in the group of fulminant ulcerative colitis. We have had a considerable number of them and the mortality rate has been extremely high.

The cause of death was apparently primarily an acute hemorrhage from the bowel. The entire large intestine was found completely filled with bright red blood. The gut itself showed innumerable deep, sharply pitted ulcerations throughout its extent, rather more numerous in the cecum or ascending colon than in the descending colon and sigmoid, where we ordinarily expect to find them most numerous.

The peritoneal cavity was free from fluid showed no evidence of peritonitis, but in attempting to remove the bowel wherever we touched it practically fell apart. I think there were no antemortem perforations but we made a dozen before we succeeded in getting the colon free from the mesentery. The difficulties that a surgeon is up against, of course, are even greater and the most delicate handling of the bowel may easily produce perforation at the time of operation.

As Dr Urmy suggests, I think the only possible chance is an immediate ileostomy. The difficulty is in recognizing them as cases of the fulminating type early enough to do the ileostomy in time.

DR. RICHARD H. MILLER For those of you who later on are going to do surgery, it is well to remember that you must never explore and handle the colon in a case of this sort because not only can you tear it but the simple handling of it may give rise to infection. Dr Daniel F. Jones told me something once which I have always remembered. He compared the colon in a case of this sort to the inside of a canvas tent. When it is raining very hard you can stand inside and the inner surface of canvas is dry, but if you run your fingers over it water comes promptly through and drips down. He always said that if you handle the bowel you can injure it just enough so that bacteria might penetrate and you must never handle the large intestine under these conditions.

A PHYSICIAN Where did the bleeding come from?

DR. MALLORY From one of these ulcers undoubtedly, we were not able to demonstrate exactly which one.

A PHYSICIAN How often do you see these patients die from hemorrhage?

DR. MALLORY It has been much less common than perforation. In my experience there are ten perforations for one hemorrhage.

She had a very small amount of bronchopneumonia, but I am sure that the hemorrhage was the main factor.

DR. GEORGE W. HOLMES One might emphasize again the danger of giving barium enemas to these patients when the bowel is in that condition.

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MEDICAL BIOGRAPHY

BIOGRAPHY is by all tokens one of the most subtle and difficult of the literary arts, the more so that it is so easily simulated by mere history. True biography is much more than a clear, dispassionate, and veracious record of the facts and achievements of a man's life. It differs from history as portraiture differs from photography. It should aim not merely to preserve the data and experiences of an individual existence, but from this factual background to evoke the illusion of personality, to recreate the magic of vitality.

Success in this aim is more difficult and more rare than in the field of fiction. For the creator of fictitious character is unhampered by fact and needs only to make his portrait true to the fundamental verities of nature. The creature of his imagination breathes with the spirit which he infuses, but need not correspond exactly with so complex a piece of work as a human being that has actually existed. The real biographer must recapture the spirit that has fled, provoke from the past the form and moving of the present,

convert the mystery of death into that of life, make his printed pages speak like the colors of a canvas, restore and immortalize the eternal significance of a human personality.

For these reasons the number of true biographers in medicine is as few as in every other field of mortal activity, nay fewer, for scarce any but a physician is capable of appreciating and recapturing the inner problems and significance of a doctor's life and work, and few physicians have the time and gift for such pursuit. Among modern medical biographers one can single in a moment the few that attain measurably to the ideal. The personality and the immeasurable significance of Pasteur live for us forever in the pages of Vallery-Radot. Sir Rickman Godlee has masterfully preserved for all time the massive and dominating reality of Lord Lister. How express and admirable is the portrait of Sir William Osler by Dr Harvey Cushing, whose sympathetic perspicacity and literary acumen adapted him perfectly to catch and recreate the charm and humanity of his subject!

Lately there has appeared another of these rare phenomena which seems to deserve inclusion in our group of really great medical biographies\*. Franklin Paine Mall was little known to the general public or even to the rank and file of the medical profession. His work had not the immediate human contacts of that of Pasteur, Lister, and Osler, nor was his retiring character such as to give him overpowering dominance and prominence in his day. But his influence upon medical science and education, and upon those fortunate with whom he did come in contact, was so great and far-reaching as to make him one of the leaders of his generation. Dr Sabin was one of his pupils and coworkers for twenty years, and the theory of education revealed in her volume is the very essence of his contribution to medical and human progress. Present and future generations of students, who knew him not, may now learn through these pages how he has influenced their lives, and gain an insight into the difficulties through which his generation won the privileges which they enjoy.

Particularly in Dr. Sabin's portrayal of Mall should praise be given and attention directed to the sixth and seventh chapters, which are the center, heart, and masterpiece of her achievement. In these chapters is presented the development of the inductive method of teaching, which was the fruition of his life and work, in them is the living revelation of the soul and genius of his personality as teacher-investigator. Teachers and students of the present and of the future may well take these chapters, and the ideas and example of Mall which they portray,

\*Franklin Paine Mall. By Florence Rena Sabin. Baltimore,  
 Md. The Johns Hopkins Press 1934.

as the gospel, law, and creed of scientific education.

Though not conspicuous in the general eye, Mall was appreciated even in his own day and has become increasingly recognized as a very great man. Dr Sabin's biography which she truly entitles "The Story of a Mind" preserves indefinitely the living personality of his greatness.

"For not in wealth or popular acclaim  
Not in the tribute and the praise of men,  
But in devout nobility of thought  
In single and unselfish purposes  
In great deeds greatly dared and truly done  
In silence and in pain lies human triumph.

### THE FINANCIAL BURDEN OF TUBERCULOSIS

A RECENT study of tuberculosis as found in the Bellevue-Yorkville district of Manhattan in Hudson County, Maplewood and the Oranges, New Jersey, and Fulton County, New York, by Ruth Abelson Seder of the National Tuberculosis Association indicates that the total cost to the 650,000 Americans suffering with the disease is about \$350,000,000 a year based on the average duration of the disease of five years. This means according to the report as published in the *New York Times* a cost of \$2,000,000,000 for the five years of invalidism of this group.

The most important feature of this tremendous burden is that it kills more people in early adult and up to middle life than any other disease and hence is a loss to the country beyond our power to evaluate.

The estimates set forth find a definite support in the records of new cases reported in the United States in 1933 for this number is 111,844 without the records of Arkansas, Idaho and North Dakota, and that for every new case reported there may be five others neither recognized nor discovered.

The agencies employed in the contest against tuberculosis are the official organizations of the Federal Government, the States and municipalities endorsed and augmented by the two thousand voluntary organizations.

As has been recognized and often emphasized, the early discovery of the disease is the most important factor in reducing the cost of tuberculosis and the mitigation of the suffering incident thereto.

Furthermore the possibility of reducing the cost imposed by the malady and the salvaging of life of the victims depend more on early treatment than any other or indeed all other factors, for appropriate treatment within six months of the first symptoms reduced the average expense by about \$250 per patient. If, on

the other hand, delay exceeds one year, the average cost of this group exceeds thirty nine hundred dollars per average patient which is nine hundred dollars above that of the average cost of treatment.

It is the consensus that sanatorium treatment is essential in this disease and that the average cost is \$350 per day. Patients in the incipient stage average to require 5.6 months' stay in the sanatorium while those of the second stage usually remain 5.9 months and those in the third stage 9.6 months. The saving to the patient or the public of the difference of four months of institutional treatment, as shown in the records of the different stages of the disease, presents a problem of great economic importance so far as the financial burden applies, but in addition the many homes disrupted by the illness of the wage earner add to the individual and community problem.

Taken by and large this disease warrants far more attention than has been given to it and more definite measures for its control are indicated. Whether the public health policies of the nation will have to be made more effective will depend upon the response of the medical profession to the requirements of the situation. Even with all of the advances made and underway, a great number of these afflicted people are infected and neglected because of ignorance and inadequate medical attention. Public instruction must continue in this field and be even more definite.

The average doctor usually sees the patient first and the question is pertinent as to whether he has been sufficiently well trained to suspect the disease in its incipiency or whether he is on the lookout for this disease in the so-called run down patient. The doctor who can and will detect tuberculosis early and arrange for appropriate treatment immediately is in the best strategic position for attacking the disease. If there are too few such men, the complaint of some of our phthisiologists warrants consideration by the medical schools.

### The Massachusetts Medical Society

#### THE SHATTUCK LECTURE

"Sprains and Dislocations" will be the subject of the Shattuck Lecture to be delivered by Dr W E Gallie of Toronto, Canada, June 3, as a feature of the Annual Meeting.

William E Gallie, MD F.A.C.S. F.R.C.S., (Eng.), University of Toronto Faculty of Medicine 1903 Professor of Surgery, University of Toronto Faculty of Medicine Surgeon in Chief, Toronto General Hospital

he began talking of the Princeton game, with his usual fervor, and to the last moment showed his interest in what was going on

For us there remained only a passing look into the open casket where death had only slightly changed his countenance, fair, and soon to vanish from our sight.

The feelings that have been striving for expression are not ours alone, but are in common with unnumbered citizens and neighbors in this city and more distant communities where because of his great friendliness he has been beloved.

If thoughtfully we bow our heads  
And close our eyes  
We readily can visualize his written name,  
And easily, in fancy we can see  
His genial visage  
And expression animate  
Still, in imagination, we can hear his chuckle,  
Or the cadence of his spoken or his singing  
voice,  
We feel his youthful spirit  
For he still seems young  
He does not look plus three score years and  
ten,  
His eyes atwinkle,  
And in many ways a youth,  
Although in mental attributes  
He really was a sage

Let us borrow a quatrain from our beloved poet, Dr Oliver Wendell Holmes, written in memory of our neighbor, Whittier, the great poet of this Merrimack Valley, and author of those sacred treasures, "The Eternal Goodness" and "At Last."

"Death reaches not a spirit such as thine,  
It can but steal the robe that hid thy wings,  
Though thy warm breathing presence we re-sign  
Still in our hearts its living semblance  
clings"

From the pen of Dr Holmes' good friend Dr S Weir Mitchell, another author and poet who has shed lustre on the medical profession, we may appropriately read his

#### "VESPERAL"

"I know the night is near at hand,  
The mists lie low on hill and bay,  
The Autumn sheaves are dewless, dry,  
But I have had my day

"Yes I have had dear Lord the day  
When at thy call I have the night,  
Brief be the twilight as I pass  
From light to dark from dark to light."

Respectfully submitted,

JOHN H. NICHOLS,  
ARCHIBALD R. GARDNER,  
HOWARD W. JEWETT,  
Committee on Resolutions

## NOTICES

### CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3 30 PM on Thursday, February 21, in the Amphitheatre of the Peter Bent Brigham Hospital, Dr Henry A. Christian, Physician in Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic To it are cordially invited practitioners and medical students These clinics will be repeated on Thursdays until May

On Saturdays in the wards of the Peter Bent Brigham Hospital, from 10 to 12, staff rounds will be conducted by Dr Christian. These are open to all physicians

### A PRIZE OF FIFTY DOLLARS FOR CASE REPORTS BY INTERNS IN MASSACHUSETTS HOSPITALS

The attention of interns in Massachusetts hospitals is called to the fact that a prize of \$50.00 has been offered by the Massachusetts Medical Society for the best written and most comprehensive case report, which may be submitted by one of their number holding any of the rotating internships for the year 1934-1935 in any Massachusetts hospital which is approved for intern training by the American Medical Association.

This report is to be typewritten, and when completed is to be sealed, unsigned, in a plain envelope, which in turn is to be placed together with a separate slip bearing the name and address of the contestant in a larger envelope, and send to

The Massachusetts Medical Society,  
Committee on Medical Education  
and Medical Diplomas,  
8 Fenway,  
Boston, Mass

The contest this year closes May 1, 1935 Reports may be submitted at any time prior to that date

### AN INVITATION TO FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY

#### HARVARD UNIVERSITY MEDICAL SCHOOL COURSES FOR GRADUATES

A list of activities in the Department of Pediatrics of the Children's Hospital and of the Massachusetts General Hospital, to which members of the Massachusetts Medical Society are cordially invited, appears below. These exercises are offered without fees as a part of the Courses for Graduates, of the Harvard Medical School, to those who are interested in keeping in touch with Clinical Pediatrics, without enrolling in the prescribed courses

The Children's Hospital and the Infant's Hospital Clinical-Pathological Conference — Thursdays, 12 00 M (Amphitheatre)

Clinic—Medical Surgical and Orthopedic Service—The first Monday in each month, 4:00 P.M. (Amphitheatre)

Clinic—Alternating Rounds between Surgical Service, Peter Bent Brigham Hospital (Amphitheatre) and Surgical and Orthopedic Services, Children's Hospital (Amphitheatre)—Thursdays 4:30 P.M.

The Massachusetts General Hospital—The Children's Medical Service

Clinical meeting of the staff—Alternate Fridays 12:00-1:00 P.M. (Ether Dome)

Ward Visit—Tuesdays 2:30-4:00 P.M. (Massachusetts Eye and Ear Infirmary)

Seminar for discussion of recent investigations and literature—Tuesdays 4:00-5:00 P.M. (Pediatric Laboratory)

MAYNARD LADD M.D.

In charge of Courses for Graduates  
Department of Pediatrics

## NOTICES OF MEETINGS

### HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) Tuesday evening February 26 at 8:15 P.M.

#### PROGRAM

Presentation of Cases.

Your Profession and Society By Dr John A. Hartwell, Professor of Clinical Surgery Cornell University Medical School, former President of New York Academy of Medicine

MARSHALL N. FULTON M.D., Secretary

### NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The next meeting of the New England Ophthalmological Society will be held on Tuesday February 19 1935 at the Massachusetts Eye and Ear Infirmary 243 Charles Street, Boston.

#### PROGRAM

9:30 A.M. Clinic and operating room.

11:30 A.M. Neuro-ophthalmological conference.

4:00 P.M. Presentation of cases Clinico-pathological conference.

#### EVENING PROGRAM

1. Cases.

2. Paper

Diagnosis and Treatment of Vertical Strabismus.  
Dr James Watson White New York

BENJAMIN SACHS, M.D. Secretary

### NEW ENGLAND PHYSICAL THERAPY SOCIETY

The next meeting will be held at the Evans Auditorium 83 East Concord Street Boston at 8 P.M. on February 20 1935.

#### PROGRAM

The Present Status of Radium and X rays in the Treatment of Malignant Disease. Frederick William O'Brien, M.D., Boston.

A motion film of a modern x-ray therapy set up will be shown.

Discussion will be opened by Herman A. Osgood, M.D., of Boston.

Physicians and medical students are cordially invited.

The Council will meet at 7:45 P.M.

ARTHUR H. RING M.D., Secretary

Arlington

### MASSACHUSETTS PSYCHIATRIC SOCIETY

The next meeting of the Massachusetts Psychiatric Society will be held at the Boston Psychopathic Hospital on Wednesday February 27 1935 at 8 P.M. The following program will be presented, furnished by Dr Clarence A. Bonner Danvers State Hospital, and his associates

"Review of the Problems of Bacillary Dysentery" by Dr Salomon Gagnon.

"Sodium Fluorid Poisoning" by Dr Leo Valetz.

"Paget's Disease," by Dr Paul Tivnan

OSCAR J. RAEDER, M.D., Secretary

### THE NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the Society will be held in the Hotel Kenmore Tuesday evening, February 26 1935 at 8:15 P.M. Telephone Kenmore 2770

Business

Communications

The Use of Amniotic Fluid in Abdominal Surgery  
Dr Herbert L. Johnson

Discussion of this paper will be opened by others prominent in this branch of surgery

Collection.

FRANK S. CRICKSHANK M.D. Secretary

### BOSTON MEDICAL HISTORY CLUB

S. FENWAY

Monday February 13 1935, at 8:15 P.M.  
"The Enigma of Michael Servetus and the Pulmonary Circulation." Lincoln Davis, M.D.  
Illustrated by the stereopticon.

JAMES F. BALLARD Secretary

### NEW ENGLAND HEART ASSOCIATION

The next meeting of the New England Heart Association will be held at the Children's Hospital, Boston, Mass., Monday February 25 1935 at 8:15 P.M. with the following program

1. Two Cases of Diphtheritic Myocarditis with Recovery Dr Edward F. Bland.
2. Classifying 100 Living Cases of Congenital Heart Malformation. Dr Paul W. Emerson and Dr Hyman Green.

3 A Case of Rheumatic Heart Disease with Recovery Dr Maurice T Briggs  
JAMES M FAULKNER, M D , Secretary

### SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

#### CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, FEBRUARY 18, 1935

Monday, February 18—

7 15 P M Lecture "Self-Measurement as a Group Guidance" Dr Allen 29 Exeter Street, Boston Single lecture \$1.50 Sponsor, Boston University School of Education

8 15 P M Boston Medical History Club Boston Medical Library, 8 Fenway

Tuesday, February 19—

New England Ophthalmological Society All-day session See page 321

12 M South End Medical Club will meet at the Headquarters of the Boston Tuberculosis Association 554 Columbus Avenue Boston

12 30 P M Annual Meeting Florence Crittenton League Speaker, Henrietta Additon, Crime Prevention Bureau, New York. Hotel Kenmore Luncheon \$1.00—Call Laf. 0160 for reservations

1 30 P M Radio Program—WEEI, "The Trends in Sewage Disposal." (Continued)

12 30-4 P M Ward visit, Massachusetts Eye and Ear Infirmary

1 45 P M Seminar Pediatric Laboratory, Massachusetts General Hospital

4 30 P M Radio Program—WBZ "Bright's Disease"

Wednesday, February 20—

8 P M New England Physical Therapy Society, Evans Auditorium 82 East Concord Street, Boston

8 P M Robert Breck Brigham Hospital, Clinical Meeting 125 Parker Hill Avenue

Thursday, February 21—

\*8 30 A M Lecture and Clinic on Heart Disease by Dr Christian, Peter Bent Brigham Hospital

\*12 M Clinico-Pathological Conference, Massachusetts General Hospital

12 M Clinico-Pathological Conference Children's Hospital

\*3 30 P M Medical Clinic. Dr Christian Peter Bent Brigham Hospital

14 30 P M Surgical Clinic. Peter Bent Brigham Hospital

Friday February 22—

6 P M Radio Program—WEEI "Eyes of the School Child. "Bedtime for Children"

Saturday February 23—

\*10-12 Medical Staff Rounds Dr Christian. Peter Bent Brigham Hospital

Sunday February 24—

4 P M Harvard University (Medical School Building D, Longwood Avenue, Boston) Free lecture External Influences on Physical Activity, Dr D B Dill

\*Open to the medical profession  
†Open to Fellows of the Massachusetts Medical Society

February 15—Boston University School of Medicine Surgical Clinic at the Boston City Hospital, Cheever Amphitheatre 12-1 P M

February 15—New England Roentgen Ray Society will meet at the Boston Medical Library, 8 Fenway, at 8 15 P M

February 18—Boston Medical History Club See page 321

February 19—New England Ophthalmological Society See page 321

February 19—South End Medical Club will meet at 12 noon at the Headquarters of the Boston Tuberculosis Association 554 Columbus Avenue Boston

February 20—New England Physical Therapy Society See page 321

February 20—Robert Breck Brigham Hospital Clinical Meeting will be held at the Hospital, 125 Parker Hill Avenue at 8 P M.

February 20—Brookfield Medical Club will meet at the Hampshire House, Ware Mass

February 21—Clinic at the Peter Bent Brigham Hospital. See page 320

February 25—New England Heart Association. See page 321

February 26—Harvard Medical Society See page 321

February 27—Massachusetts Psychiatric Society See page 321

March May—International Medical Postgraduate Courses in Berlin Programs and further particulars are obtainable from the Berlin Academy for Medical Postgraduate

Training, Berlin NW7, Robert Koch-Platz 7 (Kaiserin Friedrich-Haus)

March 8—William Harvey Society Dr Percy S Pelouze, University of Pennsylvania, will speak on "Neisseriana."

March 11, 12, 13—Surgeons to meet in Jacksonville, Florida (Southeastern Surgical Congress) See page 83, issue of January 10

### MASSACHUSETTS DIETETIC ASSOCIATION

March 12—Tuesday, 8 P M. "The Effect of Diet on Anemia" Dr Lewis Diamond Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital

March 19—Tuesday, 2 P M. Field Trip Visit Storehouse First National Stores

April 9—Tuesday 8 P M. "Small Hospital Problems," Miss Margaret Copeland, Superintendent, Free Hospital for Women

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr E R. Loveland, Executive Secretary, 133-135 South 36th Street Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester, N Y. For details address the Secretary Miss Frances N A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass

June 27-29 Inc—British National Association for the Prevention of Tuberculosis will be held at Southport, England. Persons desiring further information should write to Miss F Stickland Secretary of the Association at Tavistock House North, Tavistock Square, London, W C I, England

July 22-27—Seventh International Congress on Industrial Accidents and Diseases, Brussels, Belgium. The American Committee of the Congress is under the chairmanship of Dr Fred H. Albee New York, for the Section on Accidents, and that of Dr Emery R. Hayhurst, Columbus, Ohio, for Industrial Diseases. Physicians interested in the Congress or in the medical tour in conjunction with it may address the Secretary, Dr Richard Kovacs, 1100 Park Avenue, New York City

### DISTRICT MEDICAL SOCIETIES

#### ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Annual Meeting will be held in May Time, place and subject to be announced

E S BAGNALL M D Secretary

#### FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel Greenfield, Mass

CHARLES MOLINE, M D, Secretary

Sunderland

#### MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

March 13—Wakefield

May 8—Winchester

K L MACLACHLAN, M D, Secretary

1 Bellevue Street, Melrose

#### NORFOLK DISTRICT MEDICAL SOCIETY

February 26—See page 321

March 26—Fernald School for Feeble-Minded, Waverley Details to be announced

May—Annual Meeting Date, time and place to be announced

#### PLYMOUTH DISTRICT MEDICAL SOCIETY

March—Plymouth County Hospital

April—Lakeville Sanatorium

#### SUFFOLK DISTRICT MEDICAL SOCIETY

March 27—Clinical Meeting at the Boston Lying-In Hospital

April 24—Clinical Meeting at the Children's Hospital. The medical profession is cordially invited to attend these meetings

ROBERT L DeNORMANDIE M D, President  
GEORGE P REYNOLDS, M D, Secretary

#### WORCESTER DISTRICT MEDICAL SOCIETY

March 13—Wednesday evening The Memorial Hospital Worcester, Mass 6 30 P M Buffet supper 7 30 P M. Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10—Wednesday evening Worcester Hahnemann Hospital, Worcester Mass 6 30 P M Dinner 7 30 P M. Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8—Wednesday afternoon and evening Annual Meeting of the Worcester District Medical Society. The time and place of this meeting will be announced later

DRWIN C MILLER M D, Secretary  
27 Elm Street, Worcester

# The New England Journal of Medicine

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## LYMPHOGRANULOMA INGUINALE

### Report of Sixteen Cases In and Around New Haven\*

BY MARION E. HOWARD, M.D.,† AND MAURICE J. STRAUSS, M.D. †

SINCE the introduction of the Frei test in 1925<sup>1</sup> and the proof of its specificity in lymphogranuloma inguinale which followed, there has developed a growing interest in the diagnosis of the disease and an increasing attention to the variety of its clinical manifestations. Earlier work with the antigen was directed primarily toward differentiating cases of inguinal adenitis of unknown etiology, the establishment of climatic bubo and lymphogranuloma inguinale as one and the same condition

that its occurrence was by no means limited to men but that chronic vulval elephantiasis (eschiomene) and rectal strictures in women were related etiologically to climatic bubo in men, that the clinical picture might be masked by other infections, that the infection might take the form of a non-specific urethritis.<sup>2</sup> Certainly it has proved to be fairly common in the temperate zone and among the white population. This report deals with sixteen cases of lymphogranuloma inguinale presenting various aspects of the infection which have been found in and around New Haven.

#### CASE 1

A B A thirty-one year old Negro was admitted to the New Haven Hospital on April 11, 1933 complaining of headache, fever and general malaise of eight days duration. The headache, originally frontal had shifted to the occipital region and recurred every afternoon and evening associated with pain at the back of the neck. Five days before admission the patient noticed swelling and slight tenderness of the glands in both groins and a dull aching pain across the lower back. No history of syphilis was obtainable and a Wassermann test made one year before admission had been negative. There was history of gonorrhea six weeks prior to the onset of the present illness when he had been traveling in Florida.

Temperature was 100.2 F., pulse 84; respirations 20 and blood pressure 130/84. Inguinal and femoral glands on both sides were considerably enlarged and matted together. On the left, the inguinal were fused with the femoral forming a mass 9.0 x 6.0 cm. in diameter rubbery in consistency and not especially tender. Axillary and cervical glands were palpable but not enlarged. The epitrochlears were slightly enlarged. The edge of the spleen was definitely palpable on deep inspiration, sharp but not very hard. There was a leukocytosis of 12,550 with polymorphonuclears 60 per cent, lymphocytes 24 per cent, large mononuclears 12 per cent and eosinophils 2 per cent. The Kahn and Wassermann reactions were negative. The tuberculin test (0.2 cc. of 1/1000 O.T.) was positive.

Two days after admission, softening of the glands in the left groin was noted. Gland puncture yielded 0.5 cc. of thick creamy pus. No organisms were seen on direct smear of the pus. Cultures in broth and on blood agar aerobically and anaerobically gave no growth. Darkfield examination was negative for spirochetes.

A week after admission the headache and general malaise had disappeared and the patient was afebrile. The leukocytosis persisted (13,100 cells) with a differential showing polymorphonuclears 60 per cent, lymphocytes 21 per cent, large mononuclears 23 per cent, eosinophils 3 per cent and basophils 1 per cent. There was fluctuation of the glands in



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and the study of the disease picture in men. Recognized as a venereal infection, inguinal adenitis in women was rare and cases of contact were few. Its geographical distribution was regarded largely as tropical and the colored race seemed more commonly affected. By 1929, the extension of the work with the Frei antigen made clear the facts that inguinal adenopathy with or without suppuration was not the only clinical evidence of the disease,<sup>3</sup>

\*The antigen used in testing was prepared in the usual manner from five of the reported cases and checked with known antigen from other sources (Dr Marion Sulzberger and Dr A. W. Grace of New York). Pus obtained from suppurating bubos was diluted five times with normal sterile saline, inactivated at 60 degrees (C.) for two hours and day placed in the ice-box overnight and heated again for one hour at 50 degrees (C.) the next day. The test consisted of injecting 0.1 cc. of this the next day. The test consisted of injecting 0.1 cc. of this antigen subcutaneously on the dorsal surface of the forearm. A test was read as positive when at the end of forty-eight hours a raised papule surrounded by an area of erythema was found at the site of the injection. In negative cases only the mark of needle puncture remained.

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the left groin and early softening of those on the right. A second gland puncture yielded 20 cc of slightly yellow, creamy pus, sterile in broth, on blood agar, Korper's and Sabouraud's media. Inoculation into a guinea pig resulted in a sterile abscess at the site of the inoculation without any regional or general glandular enlargement. Antigen was prepared from this pus, and in the patient, the injection of the antigen resulted in a papule which increased to 3 mm in diameter within forty eight hours surrounded by a small area of redness. There was a good deal of local tenderness. In a control, within forty eight hours, there was a tiny papule only 1 mm in diameter without any surrounding redness and no tenderness.

Following the second puncture, glands in the left groin decreased in size and at the time of discharge (May 13, 1932) there was a firm rubbery matted group of glands measuring 40 x 50 cm. On the right, however, the glandular mass had become fluctuant and on the day of discharge 20 cc of thin, blood tinged material was obtained by gland puncture. This was bacteriologically sterile as the others had been.

The patient was seen again in September, 1932, when there remained small masses of shotty glands in both groins, those on the right slightly larger than those on the left. Intracutaneous test with 0.1 cc. of known Frei antigen gave within forty eight hours a papule 4 mm in diameter, surrounded by a red areola of 17 cm. In January, 1933, eight months after discharge from the hospital, the inguinal glands were even smaller than they had been in September. The patient had had no treatment and had been carrying on his occupation as chauffeur without untoward effect.

#### CASE 2

**E F** A thirty three year old white male admitted to the Middlesex Hospital October 2, 1934, for a herniorrhaphy. Glands in both inguinal regions were found to be enlarged, quite firm and slightly tender, and the patient stated he had had some discomfort on walking and had noticed slight swelling in the groins for two weeks. Frei tests were positive. Kahn and Wassermann tests were negative. For the first few days of hospitalization, the patient ran a mild febrile course, 100-100.6°F. There was a leukocytosis of 14,600 with a relative increase in lymphocytes and large mononuclears. The glands slowly increased in size, particularly on the left with central softening. About a week after admission, there was found a papule the size of a hickory nut on the under side of the penis halfway up the shaft. This ruptured spontaneously and had entirely healed by October 28. Pus from this nodule showed organisms morphologically typical of gonococci. On October 17 the glands in the left groin were aspirated and 50 cc of thick, tenacious, slightly blood tinged pus was obtained. Eight days later glands on the right were aspirated yielding 40 cc. of thick, yellowish green pus. He was treated by means of intradermal injections of Frei antigen as follows. On October 29, November 8, November 14 and November 25 he was given 0.3 cc each time. There was no tenderness or swelling in the inguinal regions until November 25 when he complained of pain and swelling in the right groin. There was present a slightly fluctuant red mass about 2 x 2 cm in the right inguinal region. On November 27 this was aspirated and about 3 cc of white purulent material obtained. He has not been seen since that time.

#### CASE 3

**J L** Aged twenty two years, white male, single, was first seen February 27, 1933, with a urethral discharge of two months' duration. Smears of the pus

showed gonococci, and treatment was begun. On March 29, 1933, there was found a small superficial ulcer of the mucosa of the prepuce just behind the corona. The inguinal glands were enlarged, discrete and non tender. Mercurochrome had been applied to the ulcer so no darkfield examination was made. Two days later, March 31, 1933, there was a definite collar of induration surrounding the ulceration and darkfield examination showed typical Treponema pallidum. Wassermann and Kahn tests were negative but antiluetic treatment was started. Two months later, May 26, 1933, the patient was confined to bed because of tender matted right inguinal glands which he treated with hot applications. By June 6 the mass had softened and 50 cc of a mixture of blood and very thick pus was aspirated. Repeated Frei tests, with autogenous and two other antigens proved positive, the autogenous giving the least reaction. The glands though still enlarged had receded in size, there was no tenderness or sinus formation. There has been no treatment.

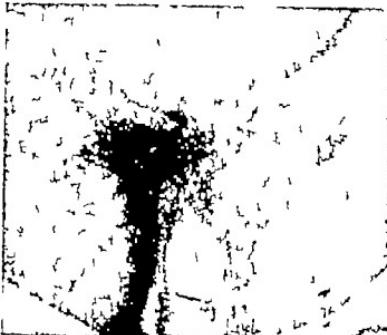
#### CASE 4

**A A** Aged forty seven years, white male, married, was first seen June 7, 1933, complaining of a sore on his penis and swelling in the groin. He gave a history of extramarital exposure with a Negress one month previously. The inguinal swelling had been present for two days and the penile sore for one week. On examination there was a profuse purulent urethral discharge and two involuting punched-out ulcers with thick borders on the preputial mucosa. There was a bilateral inguinal adenitis, non tender and showing no signs of periadenitis. A smear of the urethral discharge showed many pus cells but no organisms. Subsequent smears gave similar results. Initially, the Wassermann and Kahn were negative but one week later, June 14, 1933, the Wassermann was negative and the Kahn positive. Antisyphilitic treatment was started. By June 30 the inguinal glands had become larger, quite tender and matted together, with central softening. Aspiration yielded 120 cc of thick yellowish pus from which an antigen was prepared. Another 100 cc of pus was removed July 5. The mass at this time extended along the cord toward the scrotum and there was a draining sinus at the point of previous aspiration and a spontaneous sinus at the lower end. The patient had some difficulty and pain on walking, and felt ill. Frei tests done on July 13, 25, and September 6 with known and autogenous antigens were all positive, the reaction to the autogenous vaccine being most marked in this case. Two days following the second group of Frei tests, July 27, 1933, the patient felt much improved and the glandular swellings were decreasing in size. He was treated with 0.3 cc of antigen intradermally on September 6 and by September 12 the sinus tracts had stopped draining and the glands were still receding. When last seen, April 2, 1934, the inguinal mass had almost disappeared with puckered scars at the old sinus sites. April 4, 1934, the patient still gave a positive reaction to Frei antigen. A Frei antigen made from pus from this patient's glands was regularly positive in other cases of lymphogranuloma inguinale and negative in controls.

#### CASE 5

**J D** A twenty year old American, white male was first seen January 24, 1934, complaining of urethral discharge of ten days' duration, the onset following exposure by five days. Examination of a smear was positive for gonococci and routine treatment was started. On February 16, 1934, there was seen in the left inguinal region, a large, hard, slightly tender

mass which had first appeared three or four days previously and had rapidly attained the size of a small orange. Frei tests were positive with two antigens. On March 9 there was an area of softening in the center of the matted glands. There were no glands palpable on the left. One week later March 16 1934 about 2.5 cc. of blood and pus were aspirated from the mass. Five days later another 2.5 cc. of pus were obtained. Repeated small doses of antigen were given intradermally as follows March



CASE 6 Unilateral abscess formation

28, 0.3 cc. April 2, 0.2 cc. April 9 0.3 cc. All infections gave positive reactions. The mass of glands decreased in size became firm and only slightly tender with no further discharge from the sinuses by April 11 1934. Antigen made from pus from this patient was also positive in patients with lymphogranuloma inguinale and negative in controls.

## CASE 6

L M White male married thirty five years old and a laborer by occupation was admitted to Grace Hospital on April 29 1932 complaining of pain and a gradually increasing swelling in the left groin and swelling of the prepuce of two months duration. There was no elevation of temperature and the blood count showed W. B. C. 10,300 polymorphonuclears 74 per cent, lymphocytes 14 per cent, large mononuclears 8 per cent and eosinophiles 4 per cent. The Wassermann and Kahn tests were negative and remained so on repeated examinations throughout the period of observation. On examination there was found a small hard gland in the right inguinal region with the overlying skin quite reddened. In the left groin there was a lemon sized mass of matted glands with definite fluctuation in one or two places. On the dorsal portion of the prepuce lying in the subcutaneous tissue was a hard rounded mass about the size of a large bean. There was no overlying ulceration. Darkfield examination of material aspirated from one of the glands which had not suppurred was negative. On May 6 the glands were incised and curetted and the patient was circumcised. An attempt was made to make a Frei antigen from the pus obtained but owing to a laboratory error the material coagulated leaving a small amount of clear supernatant fluid which proved to be of no value.

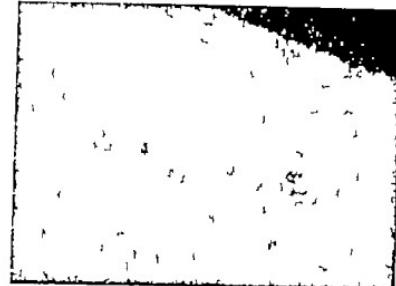
On May 14 the patient was tested with various antigens. The autogenous antigen gave no reaction. A known Frei antigen gave at forty-eight hours an area of erythema one inch in diameter with a definite raised central papule capped by a vesicle. Three days later the reaction reached its maximum and then subsided. A third antigen which had not previously been tested gave at forty-eight hours an area of erythema three fourths of an inch in

diameter with a papule and minute vesicles in the center. Three days later the papule was still noted by present.

During hospitalization the inguinal glands on the right side gradually enlarged and became matted but there were no areas of softening. The patient left the hospital against advice. He was seen again on June 6 at which time the wound in the left inguinal region was granulating and beneath a deep hard nodular mass could be felt. The mass in the right inguinal region was larger than before. On June 11, this mass was noticeably smaller. The patient disappeared until October 25 at which time there was a scar in the left inguinal region and palpable non-tender glands on both sides but no perirectal. The Frei test at this time was still positive.

## CASE 7

E R A male Negro thirty-six years old and a farmhand by occupation was admitted to Grace Hospital on June 3 1932 complaining of pain in both



CASE 7 Showing multiple follicles in both inguinal regions.

groins. He gave a history of promiscuous exposure and stated that about five and a half months before he had had three lumps in his right groin which he brought to a head by means of home remedies. About two weeks before admission he had two lumps in his left groin which he had also treated by means of home remedies. Because of the severe pain he came to the hospital. He stated that dur-



CASE 7 Strongly positive (pustular) Frei reaction.

ing the past two weeks he had had chills and fever. On admission his temperature was 99.4° F and rose to 100.6° F becoming normal the third day after admission. The blood count was as follows: R. B. C. 4,660,000 Hgb 75 per cent W. B. C. 15,800 poly morphonuclears 81 per cent lymphocytes 9 per cent large mononuclears 6 per cent eosinophiles 3 per cent and basophiles 1 per cent. The urine showed a very slight trace of albumin and several hyaline and granular casts. On physical examination he presented a mass in each inguinal region consisting of enlarged matted, non-tender glands to which the thinned overlying skin was attached.

There were several sinuses discharging a thin, purulent material.

On June 6 a Frei test was done with a tested vaccine obtained through the courtesy of Dr. M. B. Sulzberger. Within five minutes there appeared an erythema about one and one-half inches in diameter. This rapidly faded and at the end of twenty-four hours the site of the injection presented a definite papule with a central vesicle. At forty-eight hours the papule was larger and the central vesicle more definite. On the fourth day there was an area of marked erythema one inch in diameter with a central pustule about one-quarter inch in diameter. This pustule was punctured and the pus aspirated.

On June 16 the entire inguinal mass on the right side was dissected out. At operation this was found to extend down to the femoral vessels and into the scrotum. The wound was packed with iodoform gauze and allowed to granulate in. On June 27 a Roentgen ray treatment consisting of one skin unit filtered through 3 mm of aluminum was given over the left inguinal region. On July 11 the wound in the right inguinal region was almost healed and the patient was discharged. He did not return for further observation.

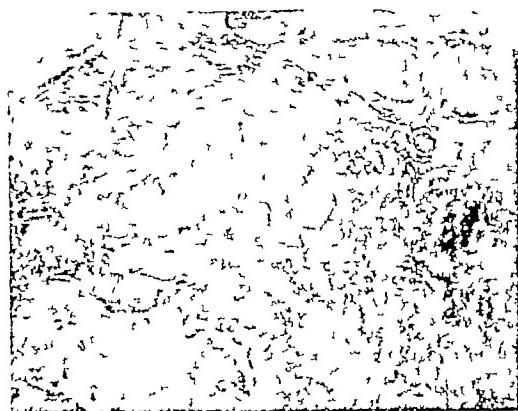
#### CASE 8

J. H. B. Aged sixty years, married, white, salesman. The patient was seen first on September 18, 1933. He was referred by his physician and the previous history was obtained from the latter. On the thirteenth of June he consulted his family physician because he had had a swelling in his left groin for one week. At that time there was, in his left groin, a hard slightly tender enlarged gland approximately 1 cm in diameter. There was no evidence of any genital lesion and there were no lesions on the leg to account for the swelling of the gland. Rectal examination was negative. Local applications were prescribed and on the nineteenth of June the swelling had become very painful. His temperature was normal and on June 21, 1933, the gland was excised. It was found to contain two distinct abscesses. Cultures from the contents of these were negative and guinea pig inoculation for tuberculosis was negative. The wound healed partially but left several draining sinuses. On September 18, 1933, when first seen (M. J. S.), there were several bean sized non tender discrete lymph nodes in the right inguinal region. In the left inguinal region there was a mass, one and one-half inches in diameter, made up of glands which were matted together. Overlying the mass was a linear scar containing three sinuses from which a thin serous fluid exuded. Just below the scar was a fourth sinus with a similar exudation. Frei tests were done with four different antigens and on September 20 all four tests showed a definite reaction consisting of an erythematous area about one-half inch in diameter with a central papule. On September 25 the patient had noticed that there was much less material coming from the sinuses. He was therefore given 0.2 cc of Frei antigen in two wheals, intradermally, followed by similar doses on September 30, October 7, and October 14. From the first of October on there had been no drainage and it was no longer necessary to wear a dressing. There was still a small oval, firm mass about an inch in length beneath the scar. He has had no treatment since October 14, 1933.

#### CASE 9

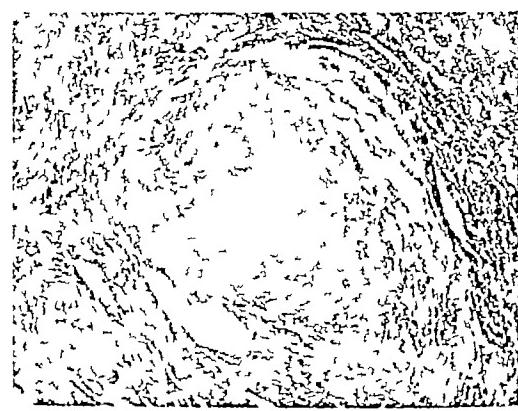
A. B. An eighteen year old white male was first seen October 17, 1934, when he stated that approximately two months before, he had entered a hospital because of swollen glands of six weeks' duration. Last exposure had been about six weeks be-

fore onset of glandular swelling. He had also had a very small sore on the frenum before the glands began to swell, this sore healed slowly. On examination, there was a minute scar at the site of the old ulceration. In each inguinal region there was a linear scar where the glands had been excised.



CASE 9 Photomicrograph ( $\times 40$ ) showing in the upper right corner two small abscesses and in the lower left corner several abscesses which have become confluent.

Beneath and around these scars there could be felt non tender, irregularly shaped, indurated masses which seemed to be made up of several glands matted together. Near the upper end of the scar on the right side was a small sinus exuding a seropurulent fluid. Frei tests were positive and the Wassermann negative. On October 26 he was given



CASE 9 Photomicrograph ( $\times 95$ ) showing necrotic central area with surrounding cellular reaction.

0.3 cc of Frei antigen intravenously, 0.2 cc of antigen had been used intradermally for the original tests. He was next seen on November 9, at which time there was no further discharge from the sinus and he was again given 0.3 cc of antigen intravenously. A section of the glands which had been excised showed the typical picture of lymphogranuloma inguinale (Cf Cut.)

#### CASE 10

M. Br. Portuguese Negro of forty-two years and husband of A. Br., Case 13, was tested with Frei antigen as a contact. He gave a history of inguinal adenitis in 1914. The glands had been incised and there was also spontaneous rupture at another point at the same time. On examination in 1932, there were a few hard shotty glands in the left inguinal region with two scars in the overlying skin. Frei test resulted in a small red papule with no surrounding areola.

## CASE 11

B S A fifty-eight year old Jewish male admitted to the New Haven Hospital October 1934 with complaints of severe right upper quadrant pain bleeding piles and painful joints. In April 1932, a hemorrhoidectomy had been performed at the Bridgeport Hospital and microscopic examination of some anal papillae which were removed raised the question of possible malignancy. The patient at that time was suffering with a so-called chronic ulcerative colitis and multiple arthritis. Another biopsy of a protruding anal mass done in April 1932, showed no evidence of a malignant process. The patient's symptoms of constipation and the oozing of white and yellow pus and blood have persisted to the present time. For the past year there had been swelling stiffness and pain in both legs. On examination there was a mass of condylomata surrounding the anal orifice forming almost a complete ring though more numerous on the right side. They arose from a broad base the individual lobules were about 0.5 cm. in diameter elevated about 20 cm., and covered with smooth glistening skin. Thick pus and blood exuded from the anal orifice no fistulas were to be seen. Rectal examination gave the impression that the rectal mucosa was replaced by these masses, extending as far as the examining finger could reach. 70 cm. from the sphincter there was a stricture not so dense but that the finger could be passed through. Proctoscopic examination confirmed these findings. In both inguinal regions were felt numerous enlarged non-tender lymph nodes. Frei test on the right forearm was strongly positive.

## CASE 12

I H A forty year old colored woman admitted to the New Haven Hospital June 8, 1933 with a diagnosis of bilateral acute and chronic pelvic inflammatory disease. There was no history of genital lesions or enlargement of the inguinal glands. Four years before, she had begun to be troubled with constipation and difficulty in defecating. Kahn was four plus and the Wassermann negative. A rectal examination was done during the routine physical examination and 50 cm. from the anal orifice was found a firm smooth annular somewhat tender stricture preventing the examining finger from passing but the lumen of which was approximately 5 mm. in diameter. Simultaneous examination of the vagina revealed thickening of the recto-vaginal septum in the region of the stricture. The inguinal glands were shotty and discrete. Frei tests were strongly positive. Proctoscopic examination showed the stricture to be annular pale glistening with a central aperture of 0.5 cm. The walls of the stricture seemed composed of dense fibrous connective tissue so dense in fact that it was impossible to snip out a piece for biopsy.

During the patient's stay in the hospital, the stools on cathartics were loose mucoid, light brown in color and negative for blood starch fat, or ova.

## CASE 13

A Dr A thirty-five year old colored woman was first seen in the dispensary of the New Haven Hospital in July 1933 with a rectal stricture. Three years before she had had an operation for anal fissure or fistula-in-ano at another hospital following which she had suffered with alternating bouts of constipation and diarrhea and at times the passage of bright red blood and clots. Physical examination at this time revealed a palpable spleen. About the anus, there was a considerable amount of mucopurulent discharge redundancy of the tissues and lack of sphincter tone. There was a rectal stric-

ture 50 cm. from the anal opening. The left half of the stricture was quite indurated and there was a ventral cleft running longitudinally with a tag of tissue hanging from the right side. The blood Wassermann was four plus and the impression was that the stricture was inelastic. Antisyphilitic treatment was started but the patient lapsed. She returned in August, 1930 with complaints of pain in the rectum and constipation. Then on rectal examination there was found a profuse, thin foul smelling yellowish discharge. The skin at the mucocutaneous border was thickened. 30 cm. above the external sphincter the examining finger met a tender indurated symmetrical, annular stenosis. On proctoscopic examination, the lumen of the bowel was constricted to less than 10 cm. The anterior rectal wall was lined by firm glistening fibrous tissue and the posterior wall by granulation tissue. On the anterior rectal wall just below the constriction was found a sinus tract 15 cm. in length from which exuded a large quantity of yellow foul smelling pus which on culture yielded *B. coli* and non-hemolytic streptococci. By repeated manual dilatation a decided relaxation of the very narrow ring was obtained. Two small pieces of tissue from the stricture taken for biopsy one of which was smooth, white and glistening and the other apparently granulation tissue in which there was marked small round cell and polymorphonuclear infiltration, and granulation tissue showing an acute and chronic inflammatory process.

The patient's final hospital admission was in October 1932 with generalized arteriosclerosis, hypertension and chronic nephritis of which she died in December 1933. On rectal examination, there were several verrucae in the perianal region. Insertion of the index finger into the anal canal caused pain and the finger was arrested 20 cm. from the anal orifice by an indurated slightly irregular stricture which bled easily. Frei tests were positive. Post mortem examination showed the wall of the large intestine to be edematous exceedingly so toward the sigmoid. At the rectosigmoid junction, there was a superficial ulcer measuring 60 in diameter. The rectal mucosa was replaced by a rather vascular granulation the surface of which was covered by a fibrinous exudate and necrotic débris. All the layers of the rectal wall were thickened by edema, fibrous connective tissue proliferation and round cell infiltration. These changes extended also external to the muscle layer and to the adjacent adipose tissue. The localization of the changes seemed to be about the blood vessels.

## CASE 14

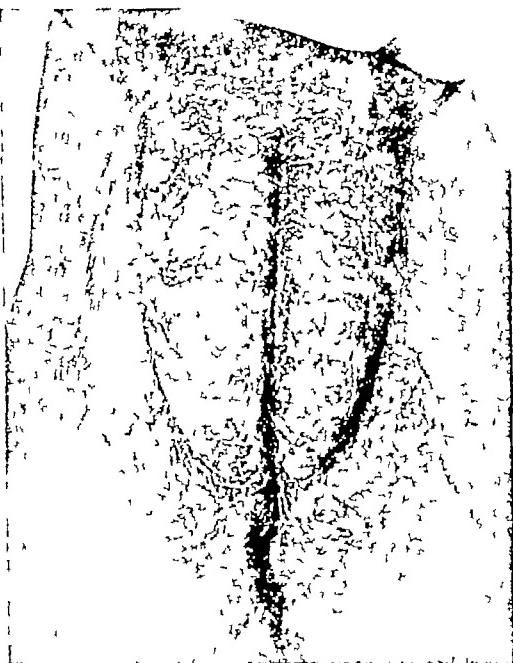
M S A thirty-five year old married Negress was admitted to the New Haven Hospital September 16, 1934 complaining of pain in the rectum. She had been constipated for the past two or three years and had had to take various laxatives. One month before admission while straining at stool, she suffered a bearing down pain and burning sensation in her rectum. She consulted her doctor who advised hospitalization in another hospital where a rectal abscess was incised and drained. During the ensuing month she lost eighteen pounds in weight.

On examination, the external genitalia were normal as was the vaginal mucosa. The cervix was lacerated and there was a profuse whitish tenacious discharge. Outside the anal margin and to the left was a scar which the patient stated was from an old injury. Near the rectum and on the same side was what appeared to be the opening of a fistula although nothing could be squeezed out of this. There were two small hemorrhoids. On rectal ex-

amination, the finger reached an obstruction at about 50 cm. This was firm and seemed to be due to a narrowing of the entire lumen. The patient denied any knowledge of any enlarged glands in the groin and examination failed to reveal any enlargement of note. Frei tests were strongly positive. The Wassermann and Kahn tests were negative. Treatment consisted of weekly intradermal injections of 0.3 cc of Frei antigen. At the time of writing she has received three such treatments and feels much improved.

## CASE 15

*F S* A colored woman of forty two years who paid frequent visits to the syphilis and gynecologic out patient clinics of the New Haven Hospital between the years of 1925 and 1929 with the complaint of vaginal tenderness and discharge. When first examined, there were redness and excoriation of the skin of the perineum and a large irregular indurated mass at the junction of the left labium with the fourchette with a deep central ulceration, the borders of which felt distinctly cartilaginous. On part-



CASE 16 Elephantiasis of the labia.

ing the labia, an opening to a sinus tract was found. With a blunt probe in the tract, the end could be made out on rectal examination just under the rectal mucosa about 40 cm above the anal orifice. There was no history of gas or fecal material having been passed per vaginam. Chronic cervicitis and chronic pelvic inflammatory disease were also present. The patient had been under antisiphilitic treatment irregularly since 1923. The Wassermann was four plus. The lesion at the fourchette was variously diagnosed syphilitic, tuberculous, and granulomatous (granuloma inguinale). It defied all forms of therapy, arsenic, antimony, mercury, light, cauterization, and even excision of the ulcer and sinus tract.

She disappeared in 1929, returned in 1931 for investigation of a possible pulmonary tuberculosis, then disappeared again until August, 1933. At this time she complained of pain in the rectum and incontinence of feces on occasion. The labia were markedly hypertrophied and covered with apparently normal skin and mucosa without any ulceration. They

were doughy in consistency. There was no evidence of ulceration at the fourchette. The skin about the anus was somewhat pigmented and thickened and just to the left of the anus, was the opening of what proved to be a fistulous tract exuding a small amount of thin material. On rectal examination the tip of the examining finger just met a smooth firm annular stricture, with a lumen of about 5 mm in diameter. The inguinal glands were just palpable, and quite firm. A combined fluoroscopic and radiographic examination of the sigmoid and rectum with the aid



CASE 15 Anteroposterior radiograph following barium enema

of a barium clysma revealed a stricture of the ampulla of the rectum. The Kahn and Wassermann tests were now negative. The Frei tests with three known antigens were all positive.

## CASE 16

*V N* A thirty three year old, colored woman who came intermittently to the New Haven Dispensary from 1925 to 1927 for antiluetic treatment. In 1921 she was hospitalized for incision and drainage of a pararectal abscess. There was a soft fluctuant tender mass in the left ischiorectal fossa the skin over which was broken down and a small quantity of pus exuded. Rectal examination revealed no connecting sinus. At this time, there was no evidence of stricture. In October, 1932, she was admitted with a contused and infected laceration of the lower lip. In the course of a routine examination, there were found several round scars above the anus, in the center of one just to the left of the anus was a sinus tract discharging pus. Less than an inch inside the sphincter was a tight, somewhat rough, acutely tender stricture which did not admit the finger. The internal opening of the fistula lay just above the stricture. Frei tests were strongly positive. Treatment was advised, but the patient failed to return. She was readmitted to the New Haven Hospital November 12, 1934, with severe lower abdominal pain. Examination revealed four perianal fistulae draining a thin foul smelling pus, and a rectovaginal fistula with rolled cartilaginous edges. The rectal stricture was still present. The Frei test was strongly positive. There were tenderness, spasm and rigidity of the lower abdomen, particularly the left lower quadrant. It seemed likely that she had developed a fistulous opening into the pelvis, so an exploratory laparotomy was done. The pelvis was found to be filled with thin foul smelling pus like that exuding from the perianal fistulae. The intestines were matted together. Drainage only was done and the outcome at the moment is doubtful.

## DISCUSSION

The first eleven cases reported give in résumé the usual course of the disease in the male. Cases 1 and 2, the earliest cases we have seen displayed the systemic reaction sometimes found, with mild fever, malaise, headache, low back pain, slight leukocytosis with a relative lymphocytosis and an increase in large mononuclears, slight splenic enlargement as well as the regional adenopathy in which at the time of admission suppuration had not yet taken place. Although early cases, no evidences of primary lesions were found.

The next seven cases (3 to 9) represent the more usual disease picture in men i.e., inguinal gland swelling, with or without suppuration and sinus formation and in many instances associated with some other venereal infection. Early the glands are firm, tender and discrete. As the process advances, the glands become matted, the overlying skin, thinned, reddened and adherent. Central softening, suppuration followed by sinus formation and secondary infection usually resultant, are the features of the clinical picture of the older writers. Because of the variety of the secondary invaders isolated, the etiology was long obscured. It now seems fairly well established that the causative agent is a virus<sup>2</sup>. In seven of the cases reported, 1 to 7 inclusive, the glandular involvement was early and signs of fluctuation were carefully watched for before aspiration was attempted. The material aspirated if bacteriologically sterile and free from blood was used to prepare antigen. In only one case which had been aspirated did a sinus tract develop at the site of needle puncture, and in two sinuses were present when they first came under observation.

Case 10 is of interest from the standpoint of the history of contact and for the fact that the Frei test is positive eighteen years after infection.

When studies have been completed, Case 11 will be reported in detail. The anal condylomata are an unusual manifestation and the question may fairly be raised as to whether they are active lesions of lymphogranuloma. It is well to bear in mind in this connection that the Frei test tells us only that the patient has been infected with lymphogranuloma, it does not indicate that the lesions present at the time of testing are of necessity evidences of the disease.

Lymphogranuloma inguinale in women presents a very different problem from that in men due to differences in lymph drainage from the various parts of the genitalia in the two sexes. Hellerström<sup>3</sup> in 1929 reporting forty seven cases found only two women with positive Frei tests and assumed that women are often merely "bacillus carriers". Rectal strictures, their position their etiology, the preponderance of their

appearance in colored women have long been well described and discussed in medical literature. It was not until 1927 when Frei<sup>4</sup> and others were proving the specificity of the Frei test that positive reactions in patients with rectal strictures led them to place lymphogranuloma along with syphilis, tuberculosis, gonorrhea and amebic dysentery as an etiological factor in so-called inflammatory strictures.

In the five cases (12 to 16) of lymphogranuloma in women reported from this clinic, all occurred in colored women, all had rectal strictures at approximately 5 to 8 cm. from the anal orifice, and in all the infection was of long standing. Four of the five (12, 13, 15, and 16) had positive Kahn and Wassermann tests and had had some antiluetic treatment in the past. In only one (15) was the rectal stricture associated with vulval ulceration and genital elephantiasis (esthiomene). Inasmuch as four of the five cases had positive Kahn or Wassermann reactions as well as positive Frei tests, the stand may well be taken that we have no clear-cut proof that we are dealing with strictures due to lymphogranuloma rather than to syphilis. If one accepts the opinion of a variety of authors according to Stokes<sup>5</sup>, syphilis of the rectum is rare and the diagnosis often made uncritically. In two of our cases (13 and 15) such a diagnosis was originally made and in one (15) intensive antiluetic treatment was instituted without avail.

It is of interest that in four of the five, there were fistulous tracts in close association with the stricture the internal fistulous opening coming just above or below it. Although at final examination the strictures were in all instances annular and composed of dense fibrous connective tissue, in Case 13, the progression over a period of years from a semi-circular indurated rectal mass to a symmetrical annular constriction was followed. It is well recognized that rectal stenosis is a late manifestation of lymphogranuloma inguinale, but too little attention has been paid to the slowly progressive smoldering chronicity of the infection at this site. This is well illustrated in Cases 13, 15 and 16. In Case 16 over a two-year period, there was healing of old fistulous tracts and the formation of new ones with the final breaking through into the pelvis.

A word about treatment is perhaps indicated. It seems to have been forgotten in an enthusiasm to try some therapeutic measure that spontaneous subsidence and resolution occur quite frequently in this disease. Thus the West Indian natives understood quite well and the climatic bubo was treated with bed rest alone. Antimony preparations (stibenyl, tartar emetic, neostibosan) the dyes, quinine, emetine, iodine, yatren have had their advocates as have x-ray, radium, ultraviolet light, and radical early extirpation of involved glands. No one of these has proved

startlingly successful. Even non-specific protein therapy has had its day. The use of vaccine therapy<sup>1</sup> is now of considerable interest and is being tried in this clinic. Cases 2, 4, 5, 8, 9, 11, and 14 are being tried with this form of therapy, and as yet it is too early to measure its success. It has been noticed that discharging sinus tracts have healed with repeated intradermal or intravenous injections of small doses of Frei antigen. More than that cannot be claimed at this time.

#### SUMMARY

1 Sixteen cases of lymphogranuloma inguinale, eleven in men and five in women, found in and around New Haven are reported.

2 Of the eleven men, eight were white and three were colored, all five women were colored.

3 All cases gave a positive skin reaction with Frei antigen.

4 In ten men, typical inguinal adenitis was

observed, two of these with early general systemic reactions. The anal condylomata of the eleventh case are regarded as an unusual manifestation of the disease.

5 All five women had rectal strictures, in one associated with esthiomenous lesions.

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## GRANULOMA INGUINALE

BY PAUL R. BRIGGS, M.D.\*

**G**RANULOMA INGUINALE TIOPICUM OR VENEREAL GRANULOMA is of rare occurrence in New England and especially infrequent in the white male. It is believed by the writer that because of the casual occurrence of this disease the medical profession is prone to overlook the unusual case and treat it otherwise.

For the above-stated reasons a brief review of the condition is felt to be in order. The condition has been described as a serpiginous ulceration occurring on or near the genitals, although not necessarily confined to this site. It is most common to the Negro race, and is prevalent in Egypt, the West Indies, and other tropical areas.

The lesion is most commonly confused with that of lues, but many cases treated for carcinoma have doubtless been venereal granuloma. It is common information that confusion occurs between this disease and decubitus, second and third degree burns, tuberculosis of skin, gangrene, and diabetic skin lesions. The etiology is doubtful, but its marked contagiousness is evident. The diagnosis of this condition, therefore, is not simple, but depends upon ruling out other disorders. Darkfield, Wassermann, and other clinical signs rule out syphilis. Carcinoma cannot easily be discarded by biopsy, for here the tissue appears grossly similar to a malignant disease and histologically is said to show granulation changes with papillary elongation and some rete proliferation. The decision in the differential diagnosis is usually based on history, clinical findings, and therapeutic results.

The disease usually begins as a papule or pustule which breaks down to ulcer formation. This ulcer takes on a serpiginous character, its edges become undermined, and there issues a foul and dirty discharge from its base. There is usually a complaint of pain, according to some observers<sup>1</sup>, loss of appetite, and weight. There is often history of sexual intercourse of a promiscuous nature. The Wassermann and darkfield examinations are negative unless the patient already has lues. The therapeutic test may be carried out with an antimony compound, such as antimony potassium tartrate (tartar emetic), or Fouadin (sodium antimony m. biscatechol disulfonate of sodium). These antimony compounds usually start repair granulation after three or four injections of therapeutic dosage and the diagnosis is established.

#### REPORT OF A CASE

A white male, aged 34 years, was admitted to the Soldiers Hospital, Norton Heights, Conn., February 13, 1934, with a large ulcer on the penis, of irregular shape and discharging a foulropy material. He complained of pain at the site of the lesion, loss of appetite, and loss of weight. There was a history of sexual intercourse one month before the lesion appeared as a small papule. The papule broke down to ulcer formation, and patient immediately consulted a physician who sent him to a local hospital for treatment. The patient was discharged from the local hospital seven days after admission and no positive diagnosis was established.

Upon entering our hospital two Wassermann and Kahn tests were carried out, with negative results. Two darkfield examinations were undertaken, with similar response. Two weeks after admission this patient was given injections of neoarsphenamin, intravenously, and potassium iodide, orally, without improvement. A culture was then taken from the ulcerated area, and revealed diplococci and diphtheroids, with the type undetermined.

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Forty five days after admission it was noted that the ulcer became larger and a second ulcer was forming. The relationship to Granuloma Inguinale was then recalled and the use of tartar emetic was instituted (5 cc of 1 per cent solution every third day). After the second injection both of the ulcers showed signs of healing. The entire area was completely replaced by healthy tissue at the end of the fifteenth injection. The patient evidenced no idiosyncrasy to the drug, and systemic symptoms such as pain loss of appetite and weight, disappeared directly after the second injection.

One month after treatment with tartar emetic had been suspended a recurrence of the condition (at another site) was noted. Fouadin was administered intramuscularly at intervals of two days for eighteen doses, and the second ulcer healed completely with no recurrence of the lesion.

#### CONCLUSION

From this single case of granuloma inguinale we have derived the following

- (1) Cases of this type are often mistaken for other diseases and granuloma should always be in a practitioner's mind when treating any type of skin lesion that appears refractory to the ordinary forms of treatment.
- (2) Granuloma, although rare, does occur in New England.
- (3) The condition occurs in the white race and is not confined entirely to the Negro.
- (4) Tartar emetic is an efficient form of treatment when supported by local antisepsis, but is surpassed by Fouadin, in that recurrence is less likely to occur with the latter drug.
- (5) The disease is contagious and can be transmitted by sexual intercourse.

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## PATELLAE BIPARTITE

BY LEOUEL DAVID SMITH, M.D.\*

MY interest in this subject was aroused by Salmon who wrote on "The Recognition and Significance of Fractures of the Patellar Border." In a routine examination of a number of knees, he found eight patellae with fissures in the outer border or at the external superior angle of the patella. He stated that the position corresponded to a line of tension of an overstretched articular capsule in lateral bowing or to the pull of the vastus externus, and resembled the marching fracture of the metatarsals. In these cases there was no history of trauma. They occurred in either patella or both, the condition complained of was pain in the region of the inner border of the patella. The fissure direction was longitudinal or obliquely downwards but not transverse as in the usual muscular fracture. Adams and Leonard observed the same phenomenon and concluded it to be a developmental anomaly. They found the fissure line to be in the outer and upper quadrant. As an aid to differentiation of this condition and fracture, they found that fracture of the patella did not occur in this region and that the condition was bilateral. A later series by Lapidus presented thirteen cases of fissure in the lateral and middle quarters, longitudinal, and in the sagittal plane. He reported them as fractures not so uncommon as usually believed. He stated the clinical picture to be clear cut, i.e., history of injury, localized tenderness over the lateral border of the patella, effusion in the joint, comparatively negligible disability. He suggested a special technique of x rayng the patellae, which we have been using for some years, in order to more clearly exhibit the condition.

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Baudet reported an injury case to a knee in a young soldier, in which x ray revealed fissure lines in both patellae in the superior external angles with complete detachment of the lateral bony fragments. He considered the condition to be not only an anatomical curiosity, but warned that the anomaly should be known by experts if they wish to avoid confusing it with partial fracture of the patella.

Mouchet referred to the condition of bipartite patella of developmental origin more commonly unilateral. He stated that, in case of traumatism, bilaterality is a sign of value in excluding partial fracture, but unilaterality does not exclude anomaly.

Baudet observed that the fissure line in these cases was in the superior external angle. Köhler of Wiesbaden showed a double osseous nodule at the superior external angle of one patella and a single nodule in the other. Mouchet insisted on a radiological technique of placing the subject on his stomach, the patella on the plate the knee externally rotated and the patella displaced outward. A plate made thus permits the greatest visualization of the multi-partite patella.

Of considerable significance in consideration of multipartite patellae are the observations of Kempson and Wright, one writing in 1902 and the other in 1903. Kempson in his dissection noticed an emargination or indentation of some patellae on the upper and outer margin. He found this condition present also in an Egyptian mummy. Wright a year later noticed the same condition and in addition mentioned a case of a secondary or accessory patella in the same quadrant. It may be mentioned here that Köhler presented a case of Osgood Schlatter's disease in which this same emargination or in

dentation obtained but in the region of the anterior tibial epiphysis

Wenzel Gruber of St Petersburg (Petrograd) recorded an accessory patella in the upper and outer quadrant and gave it the name of "patella bipartita". Joachimstal, in 1902, so far as I can determine, made the first roentgenographic study of the condition and he considered it to be a developmental anomaly. Following this publication there have been numerous contributions to the subject with various opinions as to etiology, some suggesting surgical procedure for the "repair" of partite patellae. One member of my series, an adult female with a large multipartite patella, had had it treated for fracture at various times.

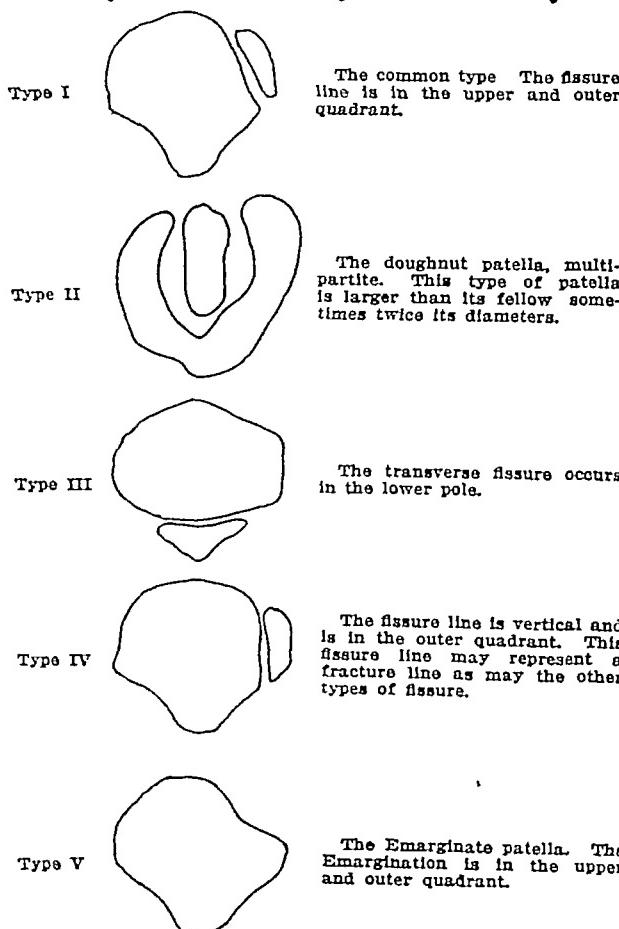
Neviaser reported it as a developmental anomaly frequently diagnosed erroneously as a fracture and summed it up with the conclusions that there are bipartite patellae and that the condition is a congenital anomaly. Further that its recognition is important for economic reasons as differentiated from fracture, that the fissure line is always in the upper and outer quadrant, that it is nearly always bilateral and that fracture does not occur in this region. Were these latter conclusions true, the problem of differentiating it and fracture would be a simple one.

In my series of twenty-four cases only six

were bilateral, four were emarginate, two were frankly transverse, five were multipartite. In one case in a college football player who had injured his knee, there was found a diagonal fissure in the region common in the bipartite patella. I am unable to differentiate fracture and anomaly. Following a period of rest, the fissure line became calcified and disappeared and this was accordingly classified as a fracture. This line was in an unusual location for a patellar fracture and corresponded to the location of seventeen fissure lines in my series of anomalous patellae.

In addition to the economic importance attached to this interesting anomaly in its differentiation from fracture, it appears to be linked with a large group of confusing nomenclature. Larsen in 1921 and Johansson in 1922 described some cases of a patellar anomaly in children twelve to thirteen years of age, who developed pain, tenderness and weakness over the patellae following exertion. It was termed epiphysitis. Hawley and Griswold presented some similar cases and gave the syndrome the name Larsen-Johansson's Disease. Here our consideration of anomaly of ossification of the patella leads us to a large group of bone abnormalities with a nomenclature verbose and confusing in the extreme. Kohler had described such a syndrome in the patella in conjunction with a similar condition in the tarsal scaphoid which we know as Kohler's disease or disease of the tarsal scaphoid. It occurred in a normal child five to six years of age and the name Kohler's disease of the patella was given to this non-inflammatory, non-infectious derangement in differentiation of this condition in the first decade and "Larsen-Johansson's," apparently a similar condition, in the second decade. It was observed in numerous individuals in association with either Kohler's disease of the scaphoid or Osgood-Schlatter's apophysitis of the tibial tubercle. The last-named syndrome was mentioned by Osgood in 1903 as a non-inflammatory process interrupting ossification in the tibial tubercle and was later discussed by Schlatter who thought it represented an incomplete separation of the epiphyseal process due to the pull of the patellar tendon, occurring more frequently in boys and from the tenth to the fifteenth year. The roentgenograph finding in well-defined cases is described as showing a marked displacement forwards of the nucleus of the tubercle.

From ten to thirteen years there projects from the upper tibial epiphysis, normally, hanging like a tongue in front of the diaphysis a tongue-shaped process. At its distal extremity there then appears an isolated osseous nucleus, the anterior epiphysis, which later becomes the tubercle and forms a bony union with the upper epiphysis about the fifteenth year of life. Numerous causes of this syndrome have been



brought forward, local infection, rickets, endocrine disturbance, etc. And to increase the confusion, the x ray findings described above are observed in numerous individuals without any symptoms. One case, a twenty three year old doctor, with acute clinical symptoms of this syndrome, presented a complete absence of ossification of the tuberosity which resembled the emarginate patella described above.

and sometimes in the acetabulum. The epiphysis shows several pieces, division, fragmentation and flattening. Legg described a cap and a mushroom type. The term osteochondral trophopathy which Legg applied to it is probably the key to the etiological process of this and allied conditions. He has maintained from the beginning that the disturbance was locally nutritional with a primary traumatic agency

	Bi-partite	Multi-partite	Emarginate	Fracture	Monolateral	Bi-lateral	Type	Sex
1 Kn	L				L		I	M
2 Lo	R			+	R		IV	M
3 Kl	R				R		I	M
4 We				+	L		V	M
5 Da		L			L		II	F
6 Gr	R & L	L				+	I & II	F
7 St	R & L					+	I & I	M
8 Ze	R & L					+	III & III	F
9 Pr			+		L		V	M
10 St.	R				R		I	F
11 Ho	L				L		I	M
12 Pl	R				R		I	M
13 Sc	R & L					+	I & I	F
14 An.	R		+		R		V	M
15 Va	R		+		R		V	M
16 St.	L				L		I	M
17 Kr	R & L					+	III & III	F
18 Gr		R & L				+	II & II	F
19 Mo	L				L		I	M
20 Wi		L			L		II	F
21 Tr	R & L					+	I & I	M
22 Ma	L				L		I	M
23 Wi	L				L		I	M
24 Kr	L				L		I	M

Twenty four patients exhibited thirty-one fissured patellae, one of which, type IV No 2 proved to be a fracture.

Type I	17	Patellae in 13 patients
Type II	5	4
Type III	4	2
Type IV	1	1
Type V	4	4

Male 15 Female 9  
Right patellae 13, left patellae 18  
Bilateral 7 Monolateral 17

In this category one's attention is carried to Legg's disease of the hip. Legg's (Calvé-Perthes') disease was described by each of these men and then by Waldenström and is known by each of these names as well as by the names osteochondritis coxa juvenilis, osteochondritis deformans, osteochondritis deformans juvenilis, coxa plana, pseudo-coxaalgia or osteochondritis of the hip, osteochondral trophopathy, etc. This condition occurs more usually in boys and more frequently between the third and twelfth years. The changes here are characteristically in the femoral epiphyseal neck.

Here it may be interpolated that Froelich's syndrome, i.e., femoral cervical coxa vara, is coincidental with increase of body weight on the capital epiphysis at the period of its greatest growth and therefore its greatest weakness. A similar condition in the spine has been described by Scheuermann and thus we are confronted with a Scheuermann's disease in which the histopathological changes are similar to those in Legg's, Köhler's and Larsen-Johansson's disease. Maiu stated that the vertebral bodies have two periods of active growth.

In the new born the vertebrae are ossified in

their principal parts including the transverse processes and articular parts of the arches. This ossification begins in the third fetal month. Growth activity is retarded at the age of six years until the appearance of the secondary centers five to six years later, when there appear formations of disc-shaped plates well marked at the vertebral margins. Little granular deposits of lime appear in the tenth to the eleventh year in the hyaline cartilage covering the upper and lower surfaces uniting in the twelfth to the thirteenth year to form calcareous plates which ossify. Union with the body is affected in the twenty-second to the twenty-fourth year.

"Scheuermann's syndrome" occurs in the second decade, principally in the male in which degenerative changes take place in the epiphyseal discs or plates, wedge-shaped deformity of vertebral bodies occurs varying in degree, in some cases arousing suspicion of Pott's disease. Scheuermann's syndrome pertains to the period of activity in the secondary centers of ossification. Calvé pointed out that a similar condition obtains in the young before the appearance of the epiphysis which he called infantile osteochondritis producing a greater degree of deformity than does the secondary type. Another syndrome resembling somewhat this condition in its insidious onset and in the wedge-shaped deformity of the centrum occurs at any age period and following some previous trauma, perhaps unrecognized at the time. This is the so-called railroad spine of Kummell's disease in which the vertebral compression or mushrooming does not occur at the time of the original injury but develops slowly following it. Schmorl has described the invasion of the centrum by cartilage cells of the intervertebral disc following compression of the spine. The question arises if there is any relation between these various clinical entities and if there is any correlated significance in the multipartite patellae. These lesions appear to have a similar onset and course. With the exception of Kummell's syndrome, they appear to be non-inflammatory derangements of bone growth at the various ossification centers during their greatest developmental activity and each lesion is associated with a definite age period. That trauma plays an important or essential part in its initiation appears evident.

Rapidly growing bone cells are physiologically weak. If at a time of growth a static unbalance obtains from increased stress or decreased resistance, a disturbance of growth may occur.

Von Axhausen's suggestion of aseptic embolism necrosis and minute discontinuity of osteochondral substance following slight trauma has much to recommend it and would bring the railroad spine into the group and also a certain type of so-called hypertrophic arthritis. Osteochondritis appears to be a general term under

which these various conditions may be grouped and also appears to render the phenomena intelligible. Such osteochondritis has been found to obtain in practically every ossifying center or region in the body that is subject to stress or strain. Thus we may, if desired, dispense with the various and confusing terminology such as Osgood-Schlatter's tibial tubercle, Kohler's tarsal scaphoid, Legg, Calvé-Perthes, Waldenstrom disease of the femoral head, Freiberg's inflammation of the head of the 2nd metatarsal, also called Kohler's disease of the metatarso-phalangeal joint, Kohler's primary disease of the patella, Larsen-Johansson's secondary disease of the patella, Calvé's primary vertebral epiphysitis, Scheuermann's secondary vertebral epiphysitis (these latter vertebral osteochondritides are also known under the names of Delahaye and Buchman), Friedrich's disease of the clavicle, Lewin's osteochondritis deformans juvenilis of the shoulder, Seveis' disease of the os calcis or apophysitis, Pannei's elbow, etc.

**SUMMARY** There is a disease common to all osteochondral growth regions more especially to centers of ossification.

Rapidly growing bone cells are physiologically weak.

If there be a discrepancy between dynamic demands and statical adequacy, the greatest changes would take place in the region of growing bone cells. Pressure due to disadvantage of joint mechanics, excessive ligamentous pull, excessive leverage compression on osteochondral tissue may cause minute compression fractures bringing about disturbance in the nutrition of the part.

Several centers of ossification may appear where usually one occurs.

These may coalesce or remain distinct throughout adult life. During the growth period several centers of ossification multiply the cellular activity and increase vulnerability to injury over that common to one center of ossification.

Osteochondritis may be a clinical entity in the absence of an observable center of ossification.

Multiplicity of ossification centers is often exhibited without clinical manifestation.

Persistence of separate centers of ossification may obtain. Such a condition in the patella constitutes multipartite or accessory patellae. The fissure lines in such a case are usually in the upper and outer quadrant. They may be in any plane in any direction.

Bilaterality cannot be depended upon to differentiate the condition and fracture.

A fracture line while rare in the outer and upper quadrant does occur here.

There are medicolegal aspects as well as surgical considerations involved in differentiation of fracture and accessory patella.

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## RESUME OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR JANUARY 1935

## MONTHLY REPORT FOR JANUARY 1935

Disease	Jan., 1935	Jan., 1934	5 Yr Aver age*
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Anterior Poliomyelitis	2	2	4
Chicken Pox	1901	1649	1842
Diphtheria	35	72	270
Dog Bite	450	340	320
Epidemic Cerebrospinal Meningitis	4	6	10
German Measles	809	47	72
Gonorrhoea	408	518	576
Lobar Pneumonia	602	710	678
Measles	1246	6089	238*
Mumps	303	651	834
Scarlet Fever	776	1028	1523
Syphilis	410	37*	410
Tuberculosis (Pulmonary)	398	319	340
Tuberculosis (Other Forms)	3*	47	43
Typhoid Fever	0	4	14
Undulant Fever	1	1	1
Whooping Cough	839	1759	1184

## RARE DISEASES

*Actinomycosis* was reported from Boston 1  
Michigan 1 total 2.

*Anterior poliomyelitis* was reported from Glou-  
ester 1 Waltham 1 total 2.

*Dysentery (ameba)* was reported from Boston 1.

*Encephalitis lethargica* was reported from Spring-  
field, 1.

Based on the figures for the preceding five years.

Epidemic cerebrospinal meningitis was reported from Brockton 1 Cambridge, 1 Chelsea, 1 Worcester 1 total 4.

*Malaria* was reported from Boston 1.

*Pellagra* was reported from Boston 1.

*Septic sore throat* was reported from Attleboro 1 Boston 4 Cambridge 1 Everett, 3 Framingham 1 Gardner 1 Waltham 1 total 12.

*Tetanus* was reported from Springfield 1 Woburn 1 total 2.

*Trachoma* was reported from Boston, 1

*Trichinosis* was reported from Adams 3 Belmont, 1 Boston 1 total 5

*Undulant fever* was reported from Boston 1

Diphtheria initiated the new year with a reduction of 51 per cent over January of 1934.

Typhoid fever remained well below the previous five-year average

Lobar pneumonia reporting showed nothing remarkable in spite of the usual winter prevalence of grippelike infections

German measles and chicken pox continued to give evidence of increased incidence while measles remained low with the exception of a few communities

Anterior poliomyelitis epidemic cerebrospinal meningitis and tuberculosis other forms were reported to about normal expectancy

Pulmonary tuberculosis scarlet fever whooping cough, and mumps showed a reduction in reported morbidity over last years figures.

## NEW HAMPSHIRE MEDICAL SOCIETY

### THE DIAGNOSIS AND TREATMENT OF BREAST LESIONS\*

BY FRANK E ADAIR, M.D.†

**Y**OUR program committee has asked me to speak on "Diagnosis and Treatment of Breast Lesions." When we consider the large incidence of breast lesions, it seems highly fitting that a large group of physicians such as this, should occasionally scan the entire subject.

During 1933, there were reported in the United States Continental area (except Utah) 128,475 cancer deaths. It is usually estimated that there are twice as many patients living with cancer as those who died for any given year, therefore there must be about 257,000 patients living with cancer within the United States. It is believed that the number of patients with benign tumors equals the number with malignant tumors. In this case there is a total of approximately 514,000 patients living within the United States who have either a benign or a malignant tumor. By incidence the gastro-intestinal tract comes first, the female generative tract second, and the breast, third. In the breast we are therefore dealing with tumors which occupy a relatively high incidence in oncology.

#### 1 CARCINOMA

The diagnosis of breast tumors is becoming increasingly difficult because the patients are coming earlier than ever before, bringing lesions so small that the signs of malignancy have not as yet developed. This is especially true in women whose age lies between thirty and forty years. At this age, the diagnosis of an early cancer of the breast is commonly confused with that of fibro-adenoma, or cyst or a localized area of mastitis. Every case presenting herself with a lump in the breast, brings up the problem of the diagnosis of cancer, fibro-adenoma, cyst and mastitis. Each must be considered carefully, the data favoring each tumor weighed, accepted or rejected. The diagnostic points in favor of *early* cancer are, delicate attachment to the overlying skin (this is the earliest sign), slight deformity of the breast contour, nipple attachment, then later nipple retraction, hardness of the tumor, solitary character of the tumor, age of the patient, etc. The *later* signs such as peau d'orange appearance, the presence of axillary nodes, ulceration, etc., are manifestations which we employ to fortify our clinical impression of the lesion.

\*Read at the Annual Meeting of the New Hampshire Medical Society at Manchester May 16 1934

†Adair Frank E—Executive Officer and Attending Surgeon Memorial Hospital. For record and address of author see This Week's Issue page 368

#### 2 FIBRO-ADENOMA

The diagnosis of fibro-adenoma is usually not difficult. The tumor is *firm*, but not stony hard, it is freely movable within the breast, has no skin attachment, is rounded over its dome if near the surface of the mammary tissue, it more frequently occurs in women in the earlier years, rather than in older women. Although the diagnosis is not difficult one must never promise any woman whose age is between thirty and forty years, that the lump will not prove malignant even though the clinician may be convinced that he is dealing with a fibro-adenoma, because he may occasionally find himself in an embarrassing position.

#### 3 CYST

A solitary cyst is difficult of diagnosis if it is less than two centimeters in diameter, because it is so tense and firm that it is not easy to distinguish it from a fibro-adenoma. Furthermore, a cyst many times becomes slightly attached to the overlying skin, which forces one to consider carcinoma. The most valuable aid to the diagnosis of a suspected cyst is to introduce an aspiration needle. This simple aid should be used much more than is the common practice.

#### 4 MASTITIS

Localized mastitis is difficult of diagnosis. It occurs more commonly in women under fifty-five years of age, than over that age. The lesion is very firm, it has over its surface, rounded small nodulations, the outline of the edge is less discrete than either the cyst or fibro adenoma, it moves freely *with* the breast but usually *not within* the breast, it is sometimes multiple, but if multiple the diagnosis is much simpler. The area of mastitis should be removed for two reasons first, to establish the diagnosis and, secondly, to be sure that a small area of cancer does not lie in the center of the lesion. The latter is not uncommon.

Mastitis should be subdivided for diagnostic purposes into

(1) *Cystic and fibrous mastitis*. The diagnosis of mastitis of these types is made on the rounded, irregular bosses, indefinite outline of the mass, the firmness of the lesion, and the multiplicity of lesions.

(2) *Tuberculous mastitis*. The diagnosis of this condition is made on multiple sinuses, the softness of the lesion, the nature of the dis-

charge which is serosanguineous, and the chest plate which usually reveals pulmonary tubercles.

(3) *Luetic mastitis* This condition is diagnosed usually by suggestions from other luetic signs of the body. The gumma is a localized sharply defined tumor of the breast which later softens, it has a dusky appearance. The serological test is of assistance.

(4) *Plasma-cell mastitis* This lesion gives a characteristic history and has the general clinical signs of cancer. The preceding history is that sometime during the course of lactation a mass developed in the breast. It was red, slightly tender and subsided partially but not completely, leaving a residual mass which was hard, there was nipple attachment, at times pigskin appearance, deformity of the breast and at times even axillary nodes. The diagnosis is made chiefly on the history. The microscopic appearance of this lesion is also very baffling. There is a heaping up of the duct lining cells, frequently eight or ten rows high giving something of the appearance of comedocarcinoma. There is a marked infiltration with the plasma cell in broad sheets and there is present also a large number of giant cells. Even in the hands of a very experienced pathologist the diagnosis is difficult to distinguish from cancer.

## 5 TRAUMATIC FAT NECROSIS

This lesion simulates carcinoma in appearance and in its clinical characteristics. The diagnosis is made largely on the history of a severe injury. This lesion occurs only in people who are corpulent. When Lee and I first described this tumor the average weight of our cases was 168 pounds. They gave the history of having had a severe fall such as was reported by one case who fell down a flight of stairs holding a picture frame in her arms in such a way that a hemorrhage took place within the breast substance. Several of the cases had previously been operated on and hypodermoclysis needles had been inserted into or beneath the breast, puncturing a vein. It seems that in all cases we were dealing with hemorrhage into fat tissue, which in later years resulted in fibrosis locally and at times calcification. The breast had the clinical appearance of cancer such as attachment to skin, retraction of the nipple, hardness of the lesion, etc. Only by the history can the diagnosis be made.

The malignant tumors of the breast are divided into sarcoma and carcinoma.

*Sarcoma.* The diagnosis of sarcoma of the breast is usually a simple matter. In general there are two types of sarcoma first, the true sarcoma of breast which results from a pre-existing fibro-adenoma. In this case there is nearly always the preceding history of the pres-

ence of a tumor for many years, which under some unknown influence takes on the property of rapid growth. The tumor reaches very large dimensions and invades the skin. Central necrosis results in softening and ulceration of the lesion. The diagnosis in this case is made chiefly on the history of the preexisting tumor together with rapid and bulky growth.

The second type of breast sarcoma which is probably equally common, is neurogenic sarcoma. It is found at the site of the breast, not because it is a true tumor of the mammary tissue but because it happens to be at the site of the breast. Neurogenic sarcomas occur anywhere in the body and are derived from the nerve sheath. The tumor is very firm but not so hard as carcinoma. The treatment for sarcoma is a wide mastectomy. A radical amputation is not necessary as they do not metastasize to the axilla. They metastasize to the lungs.

*Carcinoma.* There are several types of carcinoma of the breast each type having its own clinical characteristics, life-history, response to irradiation, and to surgery. Each type has a different prognosis. To-day we are thinking in terms of grades of malignancy. Each carcinoma falls into one of four grades, Grade I representing a slowly growing tumor, very late to metastasize, lending itself more readily to complete cure. Grade IV represents a highly malignant type which grows rapidly, metastasizes early and widely and has a poor prognosis. Between Grade I and Grade IV lie all variations.

(1) *The scirrhus carcinoma or fibrocarcinoma* is characterized by a puckering of the skin a pulling in of the nipple, deformity of the breast and extreme hardness. This tumor frequently remains localized for years. It is slow to metastasize and even spontaneous cures take place. The treatment for scirrhus carcinoma is radical amputation.

(2) *Adenocarcinoma.* This tumor is also of a comparatively low grade of malignancy but a higher grade than scirrhus. It gives the reverse appearance from scirrhus. The lesion is localized it bulges, there is a dome shaped contour, it is localized for a long time, later breaks down, ulcerates and gives the appearance of being a very bad type of carcinoma. Metastasis to the axillary nodes although late in the life history, when once this occurs represents as serious a phase as infiltrating carcinoma of other types. The prognosis for adenocarcinoma is good by radical surgery when confined to the breast. Frequently the prognosis is very good even after ulceration has occurred.

(3) *Duct carcinoma.* This lesion invades the entire mammary system usually involving the entire breast. It is the comedocarcinoma, and remains within the mammary field until it begins to invade through the basement mem-

brane at which time there is a large bulk of carcinoma. This type frequently does not disturb the contour of the breast and the carcinoma in certain stages of its development is frequently overlooked. Later there is nipple retraction, skin adherence and in this type we usually get the characteristic pigskin appearance. The prognosis in duct carcinoma is more serious than in scirrhous or adenocarcinoma, therefore the radical amputation should have a much wider skin excision than most other types.

(4) Sweat gland carcinoma. This tumor is characterized by its eccentric but characteristic position at the periphery of the breast, more commonly situated in the mammary fold. In reality it is an adenocarcinoma variety. It has a rounded contour. The life history is similar to that of adenocarcinoma. The microscopic appearance is very characteristic as the cells take only the eosin stain. The treatment is the same as that of adenocarcinoma.

(5) Papillary cyst-adenocarcinoma. This variety frequently is responsible for serosanguineous discharge of the nipple. In its first stage, the tumor commences in one of the terminal ducts as a benign papilloma, more commonly situated in the ampulla at the edge of or within the areola. The tumor remains benign for many years. In my series of 108 cases of bleeding nipple I have found that the papillary cyst-adenocarcinoma was accompanied by bleeding from the nipple on an average duration of twelve years. The benign papilloma continues to grow and later invades the basement membrane infiltrating the surrounding tissues becoming a true carcinoma. It is of a comparatively low-grade type in the scale of malignancy. Like most mammary carcinomas after the axilla has once become involved, it offers a bad prognosis.

(6) Gelatinous carcinoma. The gelatinous carcinoma is an insistent variety. It is of low grade and easily cured by a radical mastectomy, or even by a local mastectomy if early. But if recurrence takes place the prognosis is grave and the patient frequently loses her life many years later after the first appearance of the tumor. Irradiation has very little effect in controlling this tumor, and the treatment lies in amputation.

(7) Anaplastic types of carcinoma. This variety is one difficult of diagnosis as the small tumor is commonly mistaken for a fibro-adenoma. The tumor has practically no supporting structure of fibrous tissue, but is composed chiefly of very highly malignant, loose, rapidly growing cancer cells. Although the tumor may be but one centimeter in diameter it is not uncommon to find evidences of bony metastasis through the spine, femora and pelvis at the time when the patient first presents herself. This tumor although highly malignant is extremely radiosensitive. It is a Grade III or

IV on the scale of malignancy. Theoretically this tumor should never be operated on until after there has been a pre-operative course of irradiation, but, since the diagnosis is so difficult, this variety usually receives very poor diagnosis and treatment and the mortality is very high. The metastatic areas in the bone are likewise radiosensitive and irradiation occupies probably the most important position in therapy for this variety.

(8) Inflammatory carcinoma. The type has a characteristic clinical appearance. The carcinoma invades the dermal lymph spaces so that the skin involved over the breast has a sharply defined edge. There is an elevated local temperature. The appearance is that of erysipelas. The dermal lymph spaces are plugged with small rapidly growing carcinomata. The lesion spreads rather promptly—concentrically—from the breast so that at times even the opposite breast, opposite shoulder or the back is involved. Surgery should never be employed in this type of case as it is impossible to get around the lesion by surgical methods. Irradiation is the therapy of choice. The prognosis is extremely grave.

If we have a full understanding of the various types of benign and malignant tumors, the treatment will be much better planned, the results improved and the salvage of human life greater, than heretofore.

#### DISCUSSION

PRESIDENT GRAVES. The discussion of this paper will be opened by Dr George C Wilkins of Manchester.

DR WILKINS. *Mr President and Members of the New Hampshire Medical Society*—I wish to thank Dr Adair for this most adequate, and comprehensive discussion of carcinoma of the breast. Dr Adair has had a very wide experience, a long experience in a clinic that is one of the largest in the United States.

I have seen an innumerable number of these unfortunate patients. What are we going to do with our cases which, in comparison, are occasional and not regular? In the first place, we must make an examination in order to settle the question of diagnosis. The examination should always be done with everything removed down to the waist, with the patient lying down and also with the patient sitting. It is quite possible that there may be a tumor in the breast discovered by palpation of the breast between the thumb and finger, the patient in a sitting position. The normal breast may sometimes feel knobby. But when that patient is lying down flat, and the breast is palpated with the flat of the hand, that feeling of tumor formation disappears, and for this reason, that type of examination should be given to every patient who has a possible tumor of the breast.

If, when this patient comes to you, the diagnosis cannot be made, the patient is very fortunate, because if she comes to you before a diagnosis can be made, it means, even if it is cancer, that the patient has come for advice early enough to expect a cure, if she accepts the proper treatment.

If, in examining patients of this type and, as a result of the examination you find that a patient has no tumor she should be treated with much consideration, and congratulated because she came. Never laugh at a patient because she comes for an imaginary tumor in the breast. Unfortunately this does occur because I hear of it. It is an unfortunate thing because it frequently keeps the patient from returning to the same physician or going to another when she may have an actual tumor.

In making the actual diagnosis between benign tumors and malignant tumors, it is sometimes quite difficult and not so easy as it might have appeared from some of the facts Dr. Lewis told us this morning. But, if there is a question of diagnosis a biopsy should be made either by the methods described by Dr. Adair or by removing the entire tumor. If there is a question of malignancy which we are not sure of, it means that the tumor would be smaller so that that tumor could be removed and sent away for examination before a radical operation is performed.

It is a misfortune in this state that we have so few resident pathologists. But, with our state laboratory set up at Hanover and with two resident pathologists working all the time, it is possible for any of you to have a report in twenty four hours, and it is much to the patients advantage to give them this service rather than to guess at the diagnosis and perhaps perform an unnecessary operation. There seems to be no danger in removing a tumor if it is removed entirely.

Several observers who have long series of operations to their credit, have stated that the cases in which a preliminary removal of a small tumor was made had not jeopardized the life of the patient afterwards, or the proportion of cures. Many of these tumors which we are not sure of can be removed without an obvious scar by making the incision along the under side of the breast, lifting the breast up and cutting the tumor from the under side. If this is not cancer then there is no marking or scarring of the patient's breast.

Now as to operation, cancer of the breast is essentially a disease which should be attacked by operation, aided by x-ray but the operation if it is cancer should be thorough with a complete removal of the skin, the pectoral muscles and deep fascia and the axilla contents and it has been well said by some one in the past that there would be more cures of breast cancer if two men participated the first man to make the incision as wide as he thought it ought to be and then some one else to make it wider. We possibly leave more skin than we should at times.

A radical operation for even the smallest malignant growth is necessary because it is possible to find a larger nodule in the axilla than the primary tumor that is in the breast.

The method of operating I was going to say makes very little difference as to the line of incision but after seeing the pictures which Dr. Adair has shown, I will modify this by saying that any reasonable method of approach is satisfactory.

Speaking of the necessity of thorough operation, I want to cite to you one patient who came to the Elliott Hospital Cancer Clinic two weeks ago with a history of having entered another hospital one year ago with a diagnosis of carcinoma of the breast. That breast was removed, and within six months, there was a recurrence with metastases. In getting the history of that operation from the hospital it was shown that a preoperative diagnosis was carcinoma of the breast. Operation was performed with a removal of the breast and the fascia of the

pectoral muscle, nothing else. At the time she appeared before us there were two large nodules in the skin, and a large nodule in the axilla. I am citing this case simply because it would hardly seem possible in this day that any one would perform an operation that I presumed had been given up thirty years ago. This type of operation is inadequate and we can expect nothing in the way of lowering the cancer death rate in the State of New Hampshire so long as that sort of work is carried on.

In regard to the operation, I want to speak of electric coagulation not for the cutting work of the operation because I think that is very much over-rated. I think the cold knife is just as well and there is no more chance of spreading. But by touching the hemostats that have been put on to the bleeding vessels at the end of the operation, the clapping time of your operation can be very much shortened by touching the hemostats with the coagulating point quickly and removing them.

After operation, I believe in early mobility of the arm. The arm should not be fastened to the side, other than loosely for twenty four hours. After that the patient should be encouraged not forced to use her arm. So that in four or five days she should be able to put her hands above her head if that is done persistently the patient will have the use of her arm as before.

The value of x-ray treatment has been questioned by some but after what Dr. Adair has said about it, I think there should be no argument. Personally I feel that if there is any question of pre-operative and postoperative treatment, that post-operative is better chiefly because there is such a thin wall and so little tissue after operation.

The value of x-ray in the recurrent cases is most stupendous. Any recurrences can be taken care of and the life of the patient made very much more comfortable. No operation should be attempted with the recurrent appearance of cancer.

Dr. Simmons of the Massachusetts General Hospital has shown that the results of operation in the cases analyzed and where the cancer was confined to the breast, are sixty four per cent living after five years which is a little less than the figures given by Dr. Adair at the Memorial Hospital. With axillary nodes, Dr. Simmons reports twenty six per cent.

There is the difference between the early attack on cancer of the breast and the late attack, and for this reason, we must continue to investigate the importance of early diagnosis wherever we come in contact with patients and to advise frequent examination. We must teach women also that the painless lump in the breast is the one to beware of and furthermore, that all tumors of the female breast should be removed. I thank you.

PRESIDENT GRAVES. The discussion will be continued by Dr. Gile of Hanover.

DR. JOHN F. GILE, *Mr. President and Members of the Society*—I think that after Dr. Adair's very fine presentation of the subject, anything I say would be simply a repetition of the points that have been taken up.

As has been emphasized so many times and repeated here to-day if patients would come for early examination of breast tumors our cures would be greatly increased. The education of the public and the attempts made along this line in the past years by medical societies certainly constitute a step in the right direction. On the other hand, patients still come to us with a lump in the breast of months or years standing with the story that they saw their doctor but were told it was nothing or worry about and to simply watch it until it gave

trouble, with no particular indication as to just what that trouble might be, forgetting completely that a tumor alone is all the symptom necessary for a complete study. On the other hand, we have seen a very few patients who would not take this advice, and have immediately gone for further advice. A routine health examination, if it, as it should, includes a careful examination of the breast, would bring earlier cases to treatment.

Our last case of cancer of the breast was in a woman who had been in the hospital for some days with an acute illness, and in whose general physical examination a lump was found, of which she had no knowledge, and which later proved to have also axillary involvement. Our experience is that few women ever examine their own breasts, and when a lump is found, it is often just chance that led to its discovery. Often, the history is that in using a towel or adjusting the clothing the lump was noticed. It is still hard to get people to believe that cancer can be present without soreness, pain or discharge from the nipple.

Dr. Donchess, who is working in Dr. Kingsford and Dr. Miller's laboratory in Hanover, has been making a study of cancer of the breast as it has occurred in this state. His work is not ready for publication, but he kindly gave me the following figures which are of some interest in that they give a little idea of our local problem. In the past thirty six years, there have been 1742 tumors of the breast examined in the laboratory, of which 742 were malignant. During the past year, there has been an incidence of 141 examinations of the breast, with 72 malignancies. This latter figure, Dr. Miller tells me, is just about the incidence the country over of malignancies in relation to total breast examinations.

Recently, there has been considerable work on the x-ray appearance of various tumors of the breast. Dr. Sycamore, the roentgenologist at Hanover, has been making a study of these during the past three years, but we are not prepared to draw any very definite conclusions as to its value, and our final diagnosis rests on the diagnosis by the pathologist at biopsy.

We believe that a tumor of the breast that has all the textbook and classical signs of malignancy, and can be diagnosed one hundred per cent is, of course, hopeless. The more small tumors we see the more hopeless we find diagnosis without biopsy. We will do no type of operation on these cases without biopsy by the pathologist. Our method is to try and remove the whole tumor and to depend on the frozen section in practically one hundred per cent of cases. We have never tried aspiration or the punch in tumors located within the breast. Occasionally, we have the satisfaction of seeing a woman in whom we can find no tumor, who insists that there is one present. This is particularly the one which should be investigated, for removal means cure, if malignant.

With the increased number of cases coming for diagnosis and treatment, we are obligated to give them careful consideration, and after treatment not to forget that follow-up and evaluation of the methods used are necessary in order to reduce the morbidity and mortality in this dread disease. I thank you.

PRESIDENT GRAVES The subject is now open for general discussion.

DR. LUCE I would like to make a suggestion I was brought into the practice of medicine in the Gay Nineties, and there was a period from 1892 to 1898, when the popular abdominal section was done in the big hospitals in at least two out of every three cases. That was supposed to be the "cure-all." I remember one operation where the incision was made in the anterior vagina, the ovaries were brought down and a right angle clamp put on, on both sides, so that it wouldn't be known that she had an operation.

I wonder why some fellow with money enough to buy postage stamps and a typewriter can't take those old records from some of the hospitals and trace those cases and find what proportion of those women, and there are thousands of them, developed cancer of the breast. Why wouldn't that be worth while for somebody to do this? I should think it would have some bearing on this question.

PRESIDENT GRAVES Is there any other discussion? If not, we will call upon Dr. Adair to close the discussion.

DR. FRANK E ADAIR I have very little to add. Dr. Luce has brought up a very important point, namely, that of the effect of the ovarian hormones on the production of cancer. The American Society for the Control of Cancer has a woman working on this very problem, making a study of all the cases that she can get.

I heartily agree with Dr. Wilkins, about the question of doing the operation with the cutting current or with the cautery. I have always felt that a good, sharp scalpel probably disseminated no more carcinoma than the cautery.

As a matter of fact, what actually occurs when you use the cautery or the electric knife is a question of charring of tissues. If you char too much tissue, the flap will not take. If you don't char enough, you don't accomplish any more than you will with the knife.

Under the microscope, you study a section of this tissue, where the operation has been done with the electric cautery, and you will find a very narrow zone of charred tissue, and you will find also that many times the flaps do not take. So that I use only electrodesiccation, just as you do, in order to save the monotony of tying hundreds of bleeding points.

## QUESTIONS BEFORE THE MEDICAL PROFESSION\*

BY TIMOTHY F. ROCK, M.D.†

I AM unaware of any peculiar or important scientific achievement of the past year in medicine or in surgery or in the art of practice that would be appropriate for discussion at this meeting or that I might be able to present to you adequately at this time. But other problems of extreme and vital importance, on the one hand allegedly lowering our standing in the profession, and, on the other hand clouding and threatening our future well being seem to me to deserve and to require serious consideration and careful planning. I will take but a few moments of your time to bring two of these matters conspicuously into focus with the hope that the first may not be a stain upon our professional ability and that we as physicians, either through our State Medical Society or County Society, or otherwise, will promptly and with clarity and finality solve the second pressing problem lest it be solved for us to our disadvantage.

The first item constitutes a challenge to those of you who are surgeons in this community and, in fact, to surgeons in the East generally. Two weeks ago the American College of Surgeons convened in Boston. On Sunday, October 21, one of the prominent and influential papers in this State as well as in Boston featured what is supposed to have been an interview with the Director General of the College. In it the doctor is alleged to have said, "There are some fine men in Boston, good fellows and all that, but if I were to be taken ill here and were in need of an operation, I would go west to have it done. I would fly if necessary to Cleveland, Chicago or Kansas City rather than stay in Boston."

Just think that over. It is a pretty safe gamble that some of our patients will consider it thoughtfully. He would not hop to Nashua or to Manchester or to New York. In effect, it is an indictment against the ability of all of us in the East.

I rather like to feel that this gentleman was misquoted or that whatever he said, and he must have said something, was misinterpreted. I dislike to feel that he intended a slur upon us. Nevertheless, such a statement spread in bold type across the page of a widely read newspaper is distasteful and may well be harmful.

Let us regard it as a criticism that will challenge our very best efforts, stimulate us anew to further study and keener analysis, to better diagnoses and to improved technique. And let

us take it as a caution against attempting surgically and unassisted that for which we may be inadequately equipped or insufficiently prepared. Let us continue to be honest with ourselves and with our patients, to have faith in ourselves and in each other to the end that none taken sick in this old State need fly west.

Time marches on. Last week it was announced to the world that the 1934 Nobel prize for medicine had been awarded jointly to three outstanding men of the East, of Boston and of Rochester, New York, for their service to humanity in abating pernicious anemia. Thus, we have an effective antidote for this distressing episode, and New England shall remain the capital of mercy in the world in this field. On life and death occasions comes the test, and our surgeons and physicians shall continue to meet it brilliantly.

Next, we should give thought to the rather violent revolutionary or evolutionary changes rapidly following one upon another, remodeling our country's social order for the better we hope. In this process we have already been affected somewhat and it is idle to assume that we are not headed for greater and more drastic changes. It is accepted that unemployment insurance and old age pensions will be enacted into law probably by the next Congress. I am reliably informed that a committee at Washington is actively engaged at this time in evolving and preparing a plan for nationwide health insurance. It is not impossible that something will come of it and whether it will be for our good will depend in large measure upon ourselves.

In "Rules and Regulations No 7", July 1933, of the Federal Emergency Relief Administration, the principle is stated that "the conservation of the public health is a primary function of government". It is upon that principle that are builded the F E R A activities through the Public Welfare Department in the care of the indigent poor who are also medically needy. In many physicians profess to see the beginning of state medicine. I do not intend to discuss state medicine. It has its critics and in some countries its advocates, particularly in England where the medical men generally are well satisfied with it.

The present set-up in this state undoubtedly has considerable to recommend it favorably, and, because of it, many of us receive some payment for work which was formerly unpaid. But let us not forget that there are still many newly needy people and former patients too poor to employ the doctor yet too proud and

\*Address of the retiring President of the Hillsborough County Medical Society at its 28th Annual Meeting, October 20 1934.  
†Rock, Timothy F.—For record and address of a thorac-

conscious of their self-respect to be upon the Welfare roll, whom we must and will continue to care for loyally and faithfully without charge as we have done in the past and as the Great Physician appointed us to do. It has been estimated that in voluntary free service and non-collectables, the physicians of to-day contribute not less than \$1,000,000 a day to charity in this country.

Our anxiety about the present welfare arrangement and whatever similar measures may follow it, is in its administration and in its possible extension through various forms of health insurance to others beyond the indigent poor. Preferably through the State Medical Society, we should see to it that whatever moneys for the care of the sick are devoted from Federal funds or from State or City or other funds should be used primarily for that purpose and that the smallest possible sum should be allowed for overhead expenses, or for the comfort of those who are able to attach themselves to the administrative payroll. It is probably only through such an organization as the State Medical Society that we can be assured that the funds will be impartially distributed among physicians, that only physicians practising in the community shall care for the sick in that locality, and that the established privilege of patient choice of physician shall be continued. We are not ready for dictation, nor is the loyal patient forced upon the Welfare by five years of economic famine yet ready to be told who will care for him in his illness and distress.

We should have assurance that those who are cared for under any Welfare plan deserve it. We realize that there are more millions on "relief" than there were a year ago and more of these people are gradually getting to like it. There seems to be an appalling breakdown in the American spirit of self-help. Our people are being made willing to become "Forgotten Men" so that they may be given security by some branch of the government. Free goods and services never helped build the character of a man, although they may temporarily have relieved his hunger. If one gives a man everything, one takes away his self-respect, and when one takes away his self-respect, he takes away much of character. Nothing is cherished that is free, that involves no cost, no responsibility and no obligation. Since you and I will most surely pay our share in taxes for medical services under Welfare relief, we should see to it that it does not become a haven for hordes of political office-holders unfamiliar with our local problems or abused by the undeserving.

We must also bear in mind and be ever alert against the introduction of free clinics under any and every form of government or health insurance. The danger to our future from this source is well illustrated by the increase of visits to the Out-Patient Department of the Boston

City Hospital from 30,000 its first year to more than 500,000 visits in 1933.

Out of these F E R A and succeeding public welfare practises there is the danger of a demand for the lowering of all medical fees, truly never excessive or in keeping with the time and investment by the physician on the chance that somebody would employ him. It is not inconceivable that those whom we care for under relief for a fee that may barely cover transportation will upon return to work expect or demand our services at the same fee. It is not beyond the realm of possibility that an insurance company would suggest that we treat the victim of an automobile accident who happened to be on relief for the reduced fee under welfare. It is also possible that commercial companies handling workmen's and other forms of compensation will look with envy upon our fees under relief and welfare and try to find a reason to lower our present reasonable charges.

All over the country prepayment hospital and medical insurance plans are in force and their number is increasing with greater rapidity than we probably appreciate. For a moderate sum varying from 20 cents to 50 cents a week, the insured is guaranteed the payment of certain hospital or medical or dental expenses or all three of them.

Such organizations are spreading throughout industry, the employees insuring themselves against medical services. The danger to us in all of these commercial ventures is the setting of medical fees by the insurer, at the lowest rate that any physician in the community will accept, the abrogation of the right of free-choice of physician by the patient and the end of private physician and patient relationships.

The American College of Surgeons has gone on record in favor of periodic prepayment plans for medical service free from the intervention of commercial organizations. But where is the professional organization to-day ready and prepared to function for this purpose? Is there in our state any group of physicians sufficiently interested and willing to give these problems the study required to prepare a plan of periodic prepayment medical service that will serve the patient and the physician rather than profit the shrewd organizer of a business?

It seems to me that our Medical Society, State or County, should promptly and actively engage itself in the proper direction of medical service under F E R A or the Public Welfare in whatever manner these organizations may be administered to the end that they will function in the best interests only of the needy sick in our State, that they will be officered by citizens of the state familiar with our conditions and our people, and that they will function impartially among physicians willing to serve, without jeopardy to the ethical practise of medicine when economic recovery occurs.

It seems to me also that it is the duty of the State Medical Society to consider the preparation of a plan of periodic prepayment medical service to be administered or supervised by the Society for the benefit of the employed group and perhaps their families that will be more helpful or at least less harmful to us as physicians than state medicine or commercial enterprises organized for private profit.

Let us not pass these problems by as impossible of solution and be trampled upon by somebody actually doing them

## MISCELLANY

### PERSONAL ITEMS

Dr Robert O Blood is a representative to the General Court from Concord.

Dr H. L Taylor Portsmouth in November gave a series of broadcasts on Cancer over Station WHER.

Dr and Mrs Thomas J Dougherty left Rochester December 7 for Tampa Florida

Dr Ethel Stutoville Laconia in November spent several weeks with friends in Florida.

Dr and Mrs. Richard E. Wilder Lancaster left for Florida, December 12

Dr Robert B. Kerr of Manchester was appointed a member of the State Board of Public Welfare on January 3 by Governor Winant and his Council

Dr Fred E. Clow of Wolfeboro has been chosen a Fellow of the American College of Physicians

Dr Carleton R. Metcalf Secretary of the New Hampshire Medical Society spoke on "Sickness and Hospitalization Insurance" at the general session of the New Hampshire Nurses Association held in Manchester December 14

### SOCIETY ITEMS

A review of the clinic results, at a meeting of leading physicians representing all sections of New Hampshire at the Elliott Hospital in Manchester last November indicated that more than 450 persons have attended diagnostic cancer clinics during the past year

The clinic directors and other doctors met with the lay members of the New Hampshire Cancer Commission, appointed by Gov John G Winant, and discussed mutual problems and results. The Commission directs the expenditure of the appropriation of \$10,000 for the diagnostic clinics and \$25,000 for cancer treatment, made available by the last Legislature.

Dr Charles Duncan Executive Secretary of the State Board of Health, presided at the Manchester meeting

A meeting sponsored by the New Hampshire Medical Society was held at the Eagle Hotel Concord N.H., December 13. Suggestions for discussion of Relief were submitted by the Medical Society's Com-

mittee on Public Relations, Public Policy and Legislation. The Committee is made up of Dr Samuel T Ladd Portsmouth Dr Frederic P Lord, Hanover Dr Charles Duncan Concord Dr John F Gilie, Hanover and Dr Carleton R. Metcalf, Concord.

Following discussion of relief physicians and their guests took up the problem of "Sickness and Hospitalization Insurance" with reports presented by Dr Metcalf and James A. Hamilton of Hanover Chairman of the State Hospital Superintendents Club. Among the invited guests were Gov John G Winant, Gov Elect H Styles Bridges Mrs Abby F Wilder Supervisor of Relief Mrs. Mary L Davis State Board of Health John S B Davie State Commissioner of Labor Milan Dickinson State Comptroller Edgar C Hirsh, State Tax Commission Jay Corliss Chairman of State Welfare Department, and Delegates from the County Commissioners, the State Senate the House of Representatives and other groups

### HOSPITALS AND NURSES

A twelve-bed ward has been equipped in the Laconia Hospital through the bequest of James Joseph O'Brien.

The doctors of Littleton and surrounding towns who use the local hospital held a meeting on Thursday evening to organize a staff for the purpose of medical discussion and for closer cooperation in matters of medical policy in the hospital

Dr John M Page was elected President of the staff Dr A. T Downing Vice-President and Dr Barbara Beattie Secretary

It was voted to hold meetings on the first Thursday of each month at which time interesting cases and new methods of treatment will be discussed by different members.

There were fourteen babies examined at the Clinic in Elliott Community Hospital January 11, under the auspices of the Keene District Nursing Association. Dr Frank M. Dinsmoor was examining physician and Miss Anna Savage Supervisor of Nurses, was in general charge

Miss Alma Haupt, Associate Director of the National Organization of Public Health Nursing addressed the Portsmouth District Nursing Association at its November meeting.

### NEW MEMBERS

Dr Ernest H. Joy Warner  
Dr Robert Boggs Boston.

### COUNTY MEETINGS

The annual meeting of the Belknap County Medical Society was held at the Laconia Tavern, Tuesday evening November 13. Speakers were Dr Frederic P Lord President of the New Hampshire Medical Society and Dr Carleton R. Metcalf Secretary

The Cheshire County Medical Society has elected the following officers President, Walter H. Lacey, Keene, Vice-President, Walter F. Taylor, Keene, Secretary-Treasurer, John J. Brosnahan, Keene, Councilor, Arthur A. Pratte, Keene, Delegates, Osmon H. Hubbard, Keene, George S. Emerson, Fitzwilliam, Board of Censors, Arthur A. Pratte, Keene, H. S. Williams, Keene, Walter F. Taylor, Keene

The annual meeting of the Merrimack County Medical Society was held at the Eagle Hotel, Concord, N. H., Wednesday, January 2, 1935. "Hospital Insurance" was discussed by James A. Hamilton, Chairman of the State Hospital Superintendents' Club. Addresses were made by Dr. Frederic P. Lord, Hanover, President of the New Hampshire Medical Society, Dr. Carleton R. Metcalf, Concord, Secretary. The following officers were elected at this meeting President, Dr. James B. Woodman, Franklin, Vice-President, Dr. W. H. Tarbell, Contoocook, Secretary-Treasurer, Dr. Warren H. Butterfield, Concord.

The annual meeting of Sullivan County Medical Society was held at the Claremont General Hospital on Friday, December 14. An address was made by Dr. Carleton R. Metcalf, Secretary, New Hampshire Medical Society, on "Sickness Insurance". The following officers were elected for the ensuing year President, Dr. Bernard P. Haubrich, Claremont, Vice-President, Dr. Donald C. Moriarty, Newport, Secretary-Treasurer, Dr. Henry C. Sanders, Jr., Claremont, Censors, Dr. Donald C. Moriarty, Newport, Dr. Ernest L. Huse, Meriden, Dr. John H. Munro, Sunapee Delegates, Dr. Burton D. Thorpe, Newport, Dr. Charles E. Buchanan, Claremont, Member of Committee on Medical Jurisprudence, Dr. Henry C. Sanders, Jr., Claremont.

## RECENT DEATHS

**SANDERS — WALTER R. SANDERS, M.D.**, was born in Epsom, N. H., July 12, 1862

He attended Pinkerton Academy in Derry, took courses at the Dartmouth Medical School and received the degree of M.D. from the Bennett Medical College of Chicago in 1884.

He practiced for a few years in Uxbridge, Mass., and Chester, N. H., removing to Derry in 1889.

He soon acquired a very extensive practice in Derry and surrounding towns, remaining active until within a few weeks of his death, which occurred on June 29, 1934. His widow and a daughter, Miriam D. Sanders, at present a teacher in the Rogers Hall School of Lowell, survive him.

A member of the New Hampshire Medical Society, he had hoped to be able to attend its annual meeting in May, 1934, when he would have received recognition as a practitioner of fifty years' standing.

Dr. Sanders was a member of the Central Congregational Church of Derry. He had served his town in the State Legislature and in two constitutional conventions. For many years he was a member of the local board of health.

Fraternally, he was a member of the Odd Fellows and of the Knights of Pythias.

An inimitable raconteur, he had an inexhaustible fund of anecdotes and stories at his command.

He was a good neighbor, a much loved physician, and a loyal friend.

**ROBERTSON — FREDERICK McNAUGHTON ROBERTSON, M.D.**, of Bristol, N. H., died in that town, January 26, 1935. He was born in Boston, Mass., in 1876 and was educated in the schools of Framingham, Mass., and at Pratt Institute. He graduated from the Harvard Medical School in 1901 and following his graduation he studied a year at the Massachusetts Institute of Technology and practiced for a short time in Boston, moving to Bristol in 1904 where he lived for 31 years except for service during the World War when stationed at Chattanooga, Tenn., as captain in the Medical Corps. In 1902, Dr. Robertson married Miss Louise Cummings of Natick, Mass.

He was a member of the New Hampshire State Medical Society and served for three years as censor of the Merrimack County Center District Medical Society and was a Fellow of the American Medical Association.

Dr. Robertson was a member of the Harvard Club, the New Hampshire Surgical Association, the Associate Staff of the Margaret Pillsbury Hospital of Concord, and the Franklin Hospital.

He was a Mason, a member of the George Minot Cavis Post No. 26, American Legion, and the Bristol Rotary Club.

His religious affiliation was with the Grace Congregational Church of Framingham, Mass.

**DAVIS — GEORGE MOSES DAVIS, M.D.**, of 827 Beech Street, Manchester, N. H., died in that city, January 14, 1935, after a sudden illness. He was born in Norwich, Vermont, in 1864 and graduated from the Dartmouth Medical School in 1889 and had practiced in Bedford and Merrimac for a short time before settling in Manchester. He had served on the staff of the Sacred Heart Hospital for twenty-five years and as medical referee for Hillsborough County for several terms. He had also served as physician for the Amoskeag Mills and the State Industrial

School, and was a member of the New Hampshire Medical Society and a Fellow of the American Medical Association.

Dr Davis attended the Franklin Street Congregational Church.

He is survived by a daughter Hilda L. Davis, of Manchester, a son, Harold L. Davis of Pembroke four grandchildren and two nieces

GEORGE — HENRY P GEORGE, M.D., died at his

home in Claremont, January 1. Dr George was born in Monroe N. H., August 27 1884. He attended the schools of Monroe and Littleton, the University of Vermont, and received his A.M. degree at Baltimore Medical College Baltimore Md. in 1912. In the same year he established an office in Claremont and continued in practice there until last April when poor health forced his retirement. He was a pioneer in the Roentgen ray and owned and used the first large x-ray machine in Claremont.

#### MIRABILE DICTU

(Excerpt from the letter of a grateful patient in the Laconia Evening Citizen of October 4 1934) An appreciation of the Laconia Hospital beautiful for situation friendly of atmosphere and efficient in administration. Dr S — was the operating surgeon in charge of my case. It is needless for me to remind Laconia of its extreme good fortune in having one of his ability and skill — coupled with genuine friendliness connected with its hospital. He was the only doctor with whom I came in contact, but I have no doubt that all the others on the staff—each in his own particular field—are men 100 per cent qualified to heal the sick, and mend broken bodies

No matter how praiseworthy the work of the doctor his skill would count for nothing were it not clearly reflected by the nurses. From the student nurses up to those of long experience and authority one and all impressed me as taking their responsibilities seriously each devoted to her own special duties and efficient in their discharge. In the conscientious performance of their work, it seemed to me they clearly reflected thorough training and wise supervision.

#### A REPREHENSIBLE PRACTICE

The attention of this department has been drawn to a party who recently has been going about Merrimack County offering to rid pianos of moths—the latter actually present, or prospectively so or imaginary. To this end a white powder is sprinkled by him throughout the inner mechanism. As reported this powder is not only distributed over the felt and hammers but is banked to a considerable depth

under the keys in the keyboard. Analysis of a specimen of this powder as submitted to us showed it to consist of arsenate of lead. The latter is a virulent poison—proper enough in its place, as for spraying trees or for killing potato bugs, but to be deemed quite out of place and a distinct health hazard when applied in a living room as a permanent deposit in the more or less open works of a piano. Householders are therefore cautioned against permitting any such practice. There are other and harmless means of moth extermination.—*Bulletin, New Hampshire State Board of Health*

#### YALE CLINIC OF CHILD DEVELOPMENT

The first public showing of sound motion pictures of the life and growth of the human infant produced by the Yale Clinic of Child Development was given in New Haven on February 16. The films were assembled from scientific records collected by the Clinic over a period of years. They are intended for general educational and study purposes. The subjects include a description of the methods of studying infant behavior early and later stages in the growth of infant behavior posture and locomotion from creeping to walking a baby's day at twelve weeks a thirty-six weeks behavior day a behavior day at forty-eight weeks behavior patterns at one year learning and growth and early social behavior. The narrative spoken by Dr Arnold Gesell director of the clinic is integrated throughout with the picture presentation. The films are unique as a means of bringing the results of scientific study over many years to persons who are actual practitioners in fields of child health and child training.

## MEDICAL PROGRESS

### PROGRESS IN UROLOGY, 1933

BY FLETCHER H. COLBY, M.D.\*

**R**ECOGNITION of the association of disturbances in function of the parathyroid glands with the formation of stone in the urinary tract constitutes a most important contribution to urology and throws some light on the very complex question of urinary lithiasis.

Hyperparathyroidism has been recognized as a disease entity only within the last few years. Study of the parathyroid glands and their relationship to the condition known as generalized osteitis fibrosa cystica has resulted in one of the most outstanding contributions of experimental medicine of our generation. The greatest impetus to the study of these glands came when Hanson, in 1924, and Collip, in 1925, discovered an active parathyroid extract called parathormone<sup>1</sup>. Many investigators then studied this subject and succeeded in producing the typical changes of the disease in experimental animals. Outstanding in the field of research were Bauer, Albright and Aub, Wilder, Johnson and Jaffe, and Bodansky. On the clinical side, Hunter in England, and Wilder, Churchill and Cope, and others have made important contributions.

It has been shown that the parathyroid glands affect calcium metabolism and that hyperactivity of the glands from tumor formation or hyperplasia results in grave metabolism disturbances. "The calcium ions in the body fluids are markedly increased and the phosphate ions are decreased. The serum calcium rises to figures of 13 or more mgms instead of 10, and the phosphorus falls to 3 or less instead of 4 mgms. There is a large outpouring of both these elements in the urine. The large loss of calcium and phosphorus in the urine necessitates, provided there is no increased ingestion, a giving off of these elements from the bones. This in turn leads to a generalized demineralization of the bones including cortical and trabecular elements. Inasmuch as metabolic diseases are by nature generalized, this demineralization involves every part of every bone. Secondary changes in the bone, however, may be localized. There are four such deformity, cyst formation, tumor formation and fracture. With the demineralization, there appears everywhere a fibrosis of the bone marrow (osteitis fibrosa).

"Usually the symptoms are related to the skeleton and consist of pain, bone tenderness, deformity, tumor, or most often spontaneous

fracture. Polyuria and polydypsia are present in most cases and may lead to a diagnosis of diabetes insipidus. Indefinite symptoms such as decreased muscular tone, constipation and general depression are due to the hypercalcemia.

"In the classical type of the disease above described the diagnosis is usually first suspected by the x-ray appearance of the bones. The final diagnosis, however, depends on finding a high serum calcium and a low serum phosphorus."

It is important to recognize the fact that milder forms of this disease frequently occur without the marked bony changes here described. Little or no decalcification of the bones may be present by x-ray. Nevertheless, metabolic changes may be sufficiently marked to cause serious disturbances.

"With the increased calcium and phosphorus excretions in the urine one is not surprised that many of these patients develop the added complication of calcium phosphate stones in the urinary passages. The severer the degree of hyperparathyroidism the more apt this is to occur, and may be an early feature of the disease. Stones may develop without demonstrable bony changes. Furthermore, the demineralization of the bones may be prevented by the ingestion of large amounts of calcium and phosphorus in the diet, so that such individuals who drink large quantities of milk often have none of the marked bony changes but do have stone formation in the urinary tract. An important point in this consideration is the fact that renal colic may be the first symptom of the disease." (Quoted from Albright<sup>2</sup>)

Here, then, is an example of brilliant experimental research and clinical study which has led to an etiology of urinary lithiasis. The tangle is only partly unravelled, however, for dysfunction of the parathyroids accounts for but a small proportion of stones in the urinary tract. From recent material at the Massachusetts General Hospital it seems that about ten per cent of the patients presenting themselves with urinary calculi have hyperparathyroidism. It has been a routine for some time at this institution to determine the serum calcium and phosphorus of every patient with stone in the urinary tract. In several instances this procedure has led to the diagnosis and removal of a tumor of the parathyroids.

'An exceedingly good summary of parathyroidism with the surgical treatment of the disease is given by Churchill and Cope<sup>3</sup>, from whom we take the liberty of quoting freely.

\*Colby Fletcher H.—Associate Urologist, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 358.

Churchill has removed parathyroid tumors from twenty five individuals suffering from this condition, probably the largest series of such cases in this country. "It is the unusual case of hyperparathyroidism that presents a palpable tumor on physical examination. In fact only 2 of 11 cases gave external evidence of a tumor in the neck. This is due to the fact that the tumor lies deep in the neck or mediastinum and to the pliant nature of the parathyroid tissue that molds itself, to conform to adjacent structures. Grossly adenomatous parathyroid tissue resembles that of the normal gland in color, unless the tumor is palpable the search for it may be one that taxes the patience and resources of the surgeon. It is theoretically possible to encounter parathyroid tissue anywhere from the pharynx to the mediastinum. To assume that the parathyroids always lie in close proximity to the thyroid gland has proved a pitfall to the unwary surgeon. It is also erroneous to consider them symmetrically placed and four in number. In each of two postmortem dissections five parathyroid bodies have been disclosed. The widely spaced locations of even a small number of tumors attest the truth of the statements made, and the fact that 3 of 11 cases had had at least one previous operation in an unsuccessful attempt to find the tumor emphasizes their practical surgical application.

"The golden opportunity to find a small parathyroid adenoma lies in the first surgical exploration of the neck. The immediate result in the cases from which a tumor has been removed either completely or by subtotal resection, has been a correction in the disturbance in calcium and phosphorus metabolism. In fact, postoperative studies showing the return to normal constitute the final step in establishing the diagnosis and efficacy of the treatment. Following removal of the tumor in true hyperparathyroidism the serum calcium value falls with dramatic rapidity. Symptoms and signs of tetany may appear even with a serum calcium above the normal level when hypercalcemia has been present for a long time. Improvement in many of the symptoms of hyperparathyroidism may be expected within a few days." (Quoted from Churchill and Cope.)

Of the cases of urinary tract stone associated with parathyroid disease, there has been no recurrence of the stone after removal of the parathyroid tumor. When one considers the fact that the great clinics of the country report from twenty to forty per cent recurrence in nephrolithiasis, the importance of this fact becomes evident. Although hyperparathyroidism is the cause of but about ten per cent of urinary calculi it is the etiological factor in this number, and unless corrected a recurrence of the stone is probably inevitable.

Another advance reached through the study of the glands of internal secretion is a recog-

nition of the association of the anterior lobe of the pituitary with malignant tumors of the testicle. The appearance of the hormone of the anterior hypophysis (Prolan A) in the urine of a man suffering from teratoma testis was first observed by Zondek in 1929<sup>4</sup>. Ferguson working at the Memorial Hospital in New York has concentrated on this problem and we quote his writings on the subject based on the study of 117 consecutive cases of teratoma testis in which the behavior of the hormone of the anterior hypophysis (Prolan A) was determined.

"Prolan A is as yet unreported in the urine of a normal healthy man. The hormone disappears from the urine within 7 to 10 days after birth and does not again reappear except under pathological circumstances. Zondek examined the urine of 40 healthy males without result. Kegel working at Johns Hopkins in collaboration with the writer (Ferguson) examined 85 normal males without observing a positive reaction. Branch at the Boston City Hospital examined the urine of 500 men with negative results except in 2 cases of teratoma testis.

"Over 100 patients with benign lesions of the testis of all varieties have been observed and in no case was the excretion of Prolan A in excess of 100 units per liter of urine noted.

"No positive reactions were found in benign lesions of the testis, nor in normal men. One does not need to fear a false positive reaction. When the urine has been assayed for 100 units per liter of urine and no reaction observed in a suspected case of teratoma, the possibilities are against the diagnosis. This is not to say that the rare adult carcinoma of the testis may not exist, or that tumors involving the neighboring structures not of teratoid origin are absent. Finally an excretion of 500 mouse units of Prolan A per liter of urine in the male has never been observed in the absence of either teratoma testis or extra genital teratoma or chorion epithelioma<sup>5</sup>.

An important observation is that the amount of hormone excreted varies with the different types of testicular tumors, the most malignant showing the highest number of units per liter. So that these tumors are classified in the following order: (1) chorioepithelioma, (2) embryonal adenocarcinoma, (3) embryonal carcinoma with lymphoid stroma, (4) seminoma, (5) teratoma with adult features. The hormone excretion in these groups decreased in the order listed.

It was also observed that the excretion of the hormone varies with the extent of the disease. Where extensive metastases are present there is an increase in hormone excretion.

The effect of treatment on the excretion of Prolan A is interesting. Most of the cases in this series of 117 were treated by x-ray or radium. In five cases the excretion of Prolan A was unaffected by irradiation. In such in

stances the prognosis is said to be bad. In the majority, however, irradiation of the primary tumor or its metastases caused a drop in the excretion of Prolan A in the urine, the rapidity and extent of which is said to be a good index of the radiosensitivity of the tumor, and a reliable factor on which to base the prognosis. After surgical removal of a tumor in a case without metastases and with a measurable amount of Prolan A in the urine, the hormone is said to be absent as soon as seven days after operation.

Observations were made on the excretion of Prolan A in instances of recurrence and metastases of these tumors. Metastases are apt to be difficult to detect in an early stage because they involve the lymph nodes along the aorta and vena cava and are deep seated. In all of the recurrent cases in Ferguson's series an increase in the excretion of Prolan A in the urine was demonstrated. The fact that this could be detected anywhere from two weeks to three months before such lesions could be demonstrated clinically is significant. Thus, the test should provide extremely valuable information in prognosis and an indication for further treatment.

It is said that an output of 400 mouse units or less of Prolan A per liter of urine is consistent with clinical cure and that 500 units per liter is not consistent with clinical cure. The conclusion is that a patient in whom there is no clinical evidence of disease with a hormone output of 400 units or less per liter may be regarded as clinically well.

The technique of this test is said to be still in a relatively crude state. By this we assume that the actual quantitative determinations of Prolan A is not yet a refined procedure. It may be said that certain other clinics have been unable to satisfactorily quantitate the hormone to the degree here shown. Ferguson feels that recent advances in the biochemistry of Prolan A will result in more exact methods of quantitative estimation.

Regardless of degrees of refinement, this test probably has considerable value and may eventually be relied upon as much as the Aschheim-Zondek test for pregnancy. As an aid to the difficult differential diagnosis of tumors of the testes its importance is readily recognized. As an indication of the structural type of malignant tumors of the testicle, in addition, its worth will be increased. This is true since the rapidly growing embryonal carcinoma is radiosensitive and may respond well to x-ray and radium while the less malignant adult teratoma is radioresistant and better suited to radical operation. If it can be relied upon as an indication of recurrence and metastases, its value will be even greater.

A symposium on the curability of cancer provides figures on growths involving the genitourinary tract.

*Malignant Tumors of the Kidney and Pelvis of the Kidney.* Following surgical removal of

malignant tumors of the kidney at the Mayo Clinic from 1901 to January 1927, 110 patients have lived for five or more years. Inasmuch as malignant renal tumors were removed from 256 patients during this period, there were five year cures in approximately forty-three per cent. In forty-one additional cases the tumor was so extensive that it could not be removed and deep radiation was given. Seven or seventeen per cent of these forty-one patients lived for more than five years. Of the 110 cases who lived for five years, seventy-six are living and well and thirty-four have died. In the thirty-four deaths there were sixteen who died of metastases.

*Carcinoma of the Prostate<sup>8</sup>* The operation of total perineal prostatectomy was performed in forty instances. This means removal of the entire gland with its capsule, the neck of the bladder, seminal vesicles and prostatic urethra. The total operative mortality was about six per cent. Twenty-nine of these patients have lived for five years or longer. It was possible to follow twenty-five. Of these, twelve or forty-eight per cent have passed the five year period as cured.

On account of the marked encapsulation of the prostate by its own capsule and the two layers of pelvic fascia which surround it, the cancer is confined within three fascial coverings and rarely penetrates them until late. As the disease progresses it generally travels behind the bladder and in front of the two layers of fascia. Cancer of the prostate, therefore, probably presents the best prognosis for a radical cure of any of the deep-seated organs. This remarkable encapsulation, confining the disease to the limits of the prostate itself, forms the finest safeguard against invasion of adjacent tissue and gives the surgeon a splendid opportunity for radical cure (quoted from Young).

*Malignant Tumors of the Bladder<sup>9</sup>* At the Mayo Clinic from 1910 to 1927, 600 malignant tumors of the bladder were treated by various surgical procedures, resection, excision, diathermy, etc. In this group of 600 patients there were 165 (about 28 per cent) who were cured for five years or more. Sixty-seven (40.6 per cent) of these 165 patients had recurrences although forty-two of this sixty-seven are now living and free from bladder symptoms. The lesions in 110 (66 per cent) of the 165 cases were on the lateral walls and dome, whereas fifty-five (33 per cent) involved the base trigone, urethra and ureteral orifices. The relatively high percentage of five year cures of patients with tumors graded three and four is striking and serves to emphasize the importance of treating malignant lesions of the bladder which appear to be inoperable.

*Tumors of the Testis<sup>10</sup>* Three procedures in the treatment of testicular tumors are given: (1) simple castration, (2) radiation with or without castration, and (3) radical operation in

which the testicle and its primary lymph zone are removed. The fact that the embryonal carcinoma type of tumors are radiosensitive and the teratomata are not, gives at once a basis for treatment. The former with or without metastases should be treated by radiation either with or without castration. The latter (teratomata) are hopeless when there is clinical evidence of metastases. Where there is no evidence of metastases, the teratomata are the only types of tumor in which radical operation is indicated.

In eighty cases where the radical operation has been successfully performed sixty three per cent are living and thirty five per cent are dead of metastases. Seventeen or twenty per cent of these cases have been alive for five years or longer. The operative mortality has been one per cent. Of 250 cases treated by simple or chidectomy seventeen or six per cent have been living for five years or longer. Three of twenty four otherwise hopeless cases, teratomata with

lymphatic metastases, have been cured by radical operation. The fact that eighteen of thirty six cases in which the pathologist could find no evidence of metastases in the glandular tissue removed have been living for four years or longer is taken to indicate that radical surgery is preferable to simple castration.

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COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1934  
AND SEVEN YEAR AVERAGE

MONTH ENDING FEBRUARY 2 1935

1935

1934

Diseases	Week ending Jan 12	Week ending Jan 19	Week ending Jan 26	Week ending Feb 2	Average cases reported for week corresponding to Feb 2 for past seven years	Week ending Jan 18	Week ending Jan 25	Week ending Jan 27	Week ending Feb. 5
Cerebrospinal Men.	—	1	—	—	1	—	—	1	1
Chicken Pox	317	163	147	166	115	260	114	153	82
Conjunctivitis Inf.	—	—	1	—	—	3	—	34	1
Diphtheria	4	11	3	7	18	7	5	6	3
Dysentery Amebic	—	—	—	—	—	1	—	—	—
Dysentery Bacillary	1	3	1	1	—	—	—	—	—
Encephalitis Epid.	—	—	—	1	—	—	—	—	—
German Measles	5	6	7	11	11	—	—	4	2
Influenza	239	96	42	80	157	12	13	40	4
Mumps	429	539	419	568	165	10	17	14	34
Measles	52	47	29	77	75	203	133	133	97
Paratyphoid Fever	—	—	—	1	—	—	—	—	—
Pneumonia (Broncho)	70	56	24	51	56	52	38	39	29
Pneumonia (Lobar)	98	73	38	37	61	48	57	45	38
Pollomyelitis	—	—	—	—	—	—	—	1	—
Scarlet Fever	61	65	46	46	82	62	71	53	68
Septic Sore Throat	—	—	9	5	2	5	2	3	2
Smallpox	—	—	—	—	2	—	—	—	—
Trichinosis	1	1	1	1	—	—	1	—	1
Tuberculosis (pul.)	32	21	22	24	25	18	24	23	33
Tuberculosis (O.F.)	2	3	—	1	3	—	4	3	3
Typhoid Fever	5	—	3	—	—	—	—	1	—
Undulant Fever	1	1	2	—	—	1	1	—	1
Whooping Cough	82	94	59	88	74	47	64	45	38
Gonorrhoea	25	34	35	57	39	24	31	35	22
Syphilis	45	46	55	61	53	33	29	55	33

Remarks No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years.

**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES**

EDITED BY RICHARD C CABOT, M.D

CASE 21081

## PRESENTATION OF CASE

A forty-three year old American widow entered complaining of diarrhea of nine years duration.

Nine years before entry, approximately three months following what was called a nervous breakdown, she began to have frequent loose bowel movements, associated with slight cramp-like lower abdominal pain. The diarrhea was especially marked between 3:00 and 5:00 a.m., occurring about every half hour. Throughout the remainder of the day she was usually symptom-free, although about every third or fourth day she had one or two movements during the day. She also had lower abdominal pain almost every day beginning at about 4 p.m. and lasting until 8 p.m. Soda occasionally gave relief. The stools were always watery and of a golden yellow to dark brown color. Mucus was present in the stools about three or four times a week and bright red blood about once a month, the latter lasted only a day or two. These symptoms, which began nine years before entry, continued until admission. One year before entry she had two or three tarry stools. Six months later after five or six bowel movements she felt faint and nearly fell. She vomited this time and after lying down for a while felt well again. Her appetite was poor. During the first three years of this illness she gained about twenty-five pounds in weight, but during the last six years had lost 67 pounds. She gradually became weaker as the disease progressed, and during the past few months had to rest several times a day while doing her work. There was no history of fever, chills, or remissions.

Her mother died at the age of sixty-five of pneumonia. Her father, one sister and five brothers were living and well.

She was married twenty-one years before entry but had separated from her husband three years later. Her husband had died of tuberculosis six years before her admission. Two children were living and well. There were two induced miscarriages occurring at one and three months.

She was born in Massachusetts and had lived there her entire life. Nine years before entry

she had a nervous breakdown which she felt was due to the responsibility she had as a book-keeper and in taking care of her two sons.

Physical examination showed a well-developed, poorly nourished woman lying comfortably in bed. The skin and mucous membranes were pale. There was complete edentia. The tongue was smooth, pale and slightly enlarged. The thyroid was slightly enlarged. The eyes showed a slight stare and a very slight lid-lag. The chest was negative. The heart was not enlarged. The sounds were of good quality, no murmurs were heard. The blood pressure was 114/72. The abdomen was soft and no masses were felt. (Note, however, x-ray report below.) The sigmoid, however, was palpable and was believed to be filled with liquid.

The temperature was 98.8°, the pulse 88. The respirations were 18.

Examination of the urine was negative. The blood showed a red cell count of 3,070,000, with a hemoglobin of 40 per cent. The white cell count was 10,500, 64 per cent polymorphonuclears. A smear showed achromia of the red blood cells with some irregularity in size and shape. The platelets were normal. The stools were soft and watery. In seven examinations the guaiac was positive in two and mucus was found in one. No amebae were seen. A Hinton test was negative. Agglutinations for typhoid, paratyphoid and dysentery were negative. The serum protein was 6.2 per cent. The basal metabolic rate ranged from +5 to +14.

A barium enema showed practically complete loss of the mucous membrane of the entire colon. The rectum was small. There was a narrowing at the junction of the sigmoid and descending colon and one at the splenic flexure and at the hepatic flexure. Situated at the mid-portion of the descending colon were numerous saw-tooth projections. The entire ascending colon was tubular. The barium seemed to be obscured at the hepatic flexure before flowing into the ascending colon. The terminal ileum showed a constant defect one-half inch from the ileocecal valve. The spleen produced a slight pressure defect on the colon. A re-examination on the twelfth day showed a three inch constricting lesion of the ascending colon and an abnormal terminal ileum. The fluoroscopist was able on both occasions to feel a tubular mass corresponding to the area of constriction. A proctoscopy showed that the mucous membrane was granular, slightly boggy and bled easily. No polyps were seen. On the fifteenth day operation was performed.

She was doing fairly well postoperatively and was being prepared for a proctoscopy when, on the eighteenth day, while sitting up in a chair, she developed severe pain in the chest, dyspnea, cyanosis, distended neck veins and a rapid thready pulse. She died fifteen minutes later.

## DIFFERENTIAL DIAGNOSIS

DR. RICHARD H. MILLER There are several things that must be briefly discussed. This case strikes one as falling into the class of a severe chronic organic lesion of the colon, namely, tuberculosis, amebic dysentery or chronic ulcerative colitis. I think that we can rule out mucous colitis as being a non-organic lesion and one which does not require further consideration here. The deficiency diseases such as pellagra, and another one that is partly deficiency, namely sprue, do not seem to me to fit into the picture here presented. If she had pellagra there would be skin and central nervous system lesions, and if she had sprue there would be other things going with it. It seems to me that we come at once to the consideration of the three diseases which I have already mentioned first, amebic dysentery, secondly, tuberculosis, and thirdly, chronic ulcerative colitis.

She had never been out of Massachusetts, which, to an extent, is against the diagnosis of amebic dysentery, although that is possible. I saw a man who had never been out of New England—he lived at North Conway N.H.—who had amebic dysentery, proved definitely, though the source was never determined. The examination in this case shows that no amebae were found in the stool, and there is nothing in particular about the history which leads one to make that diagnosis. I think that, with the examinations which we carry out in this hospital, amebae would have been found had they been present.

As to tuberculosis, that is something which must be considered. She had married a man who later died of tuberculosis, although she had not lived with him for twelve years. The occurrence of tuberculosis in the colon is usually most marked on the right side not, in my experience, involving to such an extent the whole of the colon.

Chronic ulcerative colitis, which is an extra ordinarily serious disease, I believe can account for all the conditions here defined.

I should like to go back to the beginning and refer to certain points of interest. She said that the diarrhea was especially marked between three and five a.m. I do not know how to interpret this, but I do not think it is a matter of specific importance. It also says that she had lower abdominal pain almost every day from four o'clock until the middle of the evening. That again is not specific.

Bright red blood was passed about once a month. That could very well go with the condition of ulcerative colitis.

It says that one year before entry she had two or three tarry stools. That is hard to interpret from my point of view because it would mean blood coming from high up in the intes-

tinal tract. I cannot explain it unless there may be some other ulcerative condition high up in the duodenum.

She went on for three years feeling fairly well and gaining twenty five pounds, but following that she gradually went downhill, losing weight, from 165 to 98 pounds. One might ask oneself if there were any possibility of cancer, but I should say not, because she certainly would not live so long.

Passing down to the physical examination, we know that the one outstanding fact is that she has slight exophthalmos and slight lid lag, which suggest a very mild degree of exophthalmic goiter, but I believe that has nothing to do with the condition which we are discussing at this time.

She was moderately anemic—the red count was three million, the hemoglobin forty per cent—which would easily fit in with ulcerative colitis and furthermore, as you note, in seven examinations blood was found at two. That, again, is consistent.

The basal metabolic rate varied from five to fourteen, which is not very much if any above the normal range.

Complete loss of mucous membrane of the entire colon proves a very extensive organic disease and that is confirmed by the narrowing at the junction of the sigmoid and descending colon and the various other findings which are detected in the x ray. The constant defect noted about half an inch from the ileocecal valve may be part of the same process.

Proctoscopy shows that the mucous membrane was granular, slightly boggy, and bled easily. In chronic ulcerative colitis that is the picture which one ordinarily sees. There may be tiny ulcerations which will bleed easily when touched but such is not essential.

I will make a diagnosis of chronic ulcerative colitis and say that they have done an ileostomy for the temporary palliation of that condition. Following this she obviously did well until on the eighteenth day, she died very suddenly. The story of the death as given here would suggest to me a large thrombus, probably coming from the femoral vein, probably on the left, and the thrombus would be found curled up in the pulmonary artery.

My diagnosis is chronic ulcerative colitis, operation ileostomy, and death from pulmonary embolism.

DR. TRACY B. MALLORY I think that Dr. Holmes can add something to the x ray report.

DR. GEORGE W. HOLMES In these cases with examinations of the gastro-intestinal tract that are brought up at these conferences we have great difficulty in interpreting the findings from the films alone. It is necessary that one examine the patients and see them under the

fluoroscope to interpret the findings correctly. I can add very little to what is given in the note. Certainly from this plate, which is taken after evacuation, there is an absence of the normal haustral formation and absence of the normal mucosa, which is consistent with what Dr Miller has said, an ulcerative colitis. On the other hand in the note it is stated that a definite mass was felt. Such a finding would be most unusual in ulcerative colitis. Ordinarily when you feel a mass it means either tuberculosis or malignancy. The multiplicity of the lesions is somewhat against malignancy.

DR MILLER In the physical examination it is stated, "no masses were felt."

DR MALLORY I think you are put at a disadvantage, a mass was felt by the x-ray examiner but not by the man who did the original physical examination. Dr McKittrick was able also to feel the mass but that apparently did not get into the record.

DR HOLMES Basing my conclusions on the report, I would put tuberculosis first and ulcerative colitis second.

DR MILLER I should not expect to feel a mass in a chronic ulcerative colitis and yet from the general history of the case I would adhere to that diagnosis.

DR MALLORY An exploratory operation was done, which Dr McKittrick will tell us about.

DR LELAND S McKITTRICK If Doctor Miller had had the privilege of examining the patient as I did, he would have felt a mass in the right lower quadrant, and undoubtedly modified his diagnosis a little. I also had the privilege of proctoscoping the patient which confirmed the x-ray diagnosis of chronic ulcerative colitis. The presence of the mass in the region of the cecum or ascending colon plus the x-ray findings seemed to us to justify a preoperative diagnosis of carcinoma of the ascending colon and chronic ulcerative colitis. At operation there was a characteristic annular carcinoma of the ascending colon just above the ileocecal valve. It was very extensive and a number of firm local glands, probably metastatic, were noted. The remainder of the bowel was not palpated carefully but in the gross it was characteristic of ulcerative colitis, i.e., the bowel was narrowed, distinctly thickened, very pale, with a number of small inflammatory glands in the transverse mesocolon. The process seemed to involve the entire colon up to and including the cecum. It did not seem so extensive, however, as many of the cases of ulcerative colitis upon which we have operated and possibly not sufficiently marked to have made ileostomy necessary for its treatment. The problem which was presented to us, however, was that of deciding upon the type of operation suitable for a patient with both chronic ulcerative colitis and a carcinoma of the right colon. In other words, was the condition of the

bowel sufficiently severe to make it impossible to do a safe suture between the terminal ileum and the transverse colon following a resection of the right colon? Also, because of her long-standing chronic disease the risk of an anastomosis at this time seemed greater than in most patients with cancer of the ascending colon. The operation which seemed most suitable was removal of the right colon to about the junction of the right and middle thirds of the transverse colon according to the Mikulicz procedure. In this way we were burning no bridges, the patient had an ileostomy which could be used as such for as long a time as seemed indicated, and if more careful pathological study of the bowel seemed to indicate that an anastomosis was feasible, the spur could be cut in the usual manner and the Mikulicz procedure completed. This then was the operation which was carried out.

#### CLINICAL DIAGNOSES

Carcinoma of the ascending colon

? Ulcerative colitis

Pulmonary embolus

#### DR RICHARD H MILLER'S DIAGNOSIS

Chronic ulcerative colitis

#### ANATOMIC DIAGNOSES

Multiple adenocarcinomata of the cecum and the transverse colon

Benign polyp of the colon.

Chronic ulcerative colitis

Pulmonary embolism

Duodenal ulcers, healed

Chronic vascular nephritis.

Operative wound Resection of cecum and enterostomy

#### PATHOLOGIC DISCUSSION

DR MALLORY The specimen which we received in the laboratory showed a frank carcinoma of the cecum involving the ileocecal valve and cancer extending to the very margin of the specimen received.

The patient went along as described in the record and did die of pulmonary embolism, as Dr Miller suggested. At autopsy we found still more extensive pathology in the colon. Immediately beyond the point of resection were numerous small plaque-like thickenings of the mucosa which felt quite hard but were not ulcerated. We were not able to guess what they were in gross. Microscopically each of them seems to be a separate carcinoma. The entire colon from end to end showed the denudation of the mucosa which is characteristic of ulcerative colitis, though no deep penetrating ulcers were present. When we came to the splenic flexure we found another tumor, a polypoid mass without induration which microscopically ap-

pears to be a benign polyp. So that we can sum up the case as one of slowly progressive chronic ulcerative colitis in which there developed several separate neoplasms one of which was benign and two or more of which were malignant.

A PHYSICIAN Can you say when in the course of events in this history the carcinoma put in an appearance?

Dr. MALLORY I do not see any way that we can guess that. I think there can be no question that the colitis preceded the tumors by some time. So far as I can remember this is the first case of ulcerative colitis we have had in this hospital in which carcinoma has developed.

A PHYSICIAN Is there any way of telling whether the colitis or the polyp was first?

Dr. MALLORY I suspect strongly the colitis. It was of a very chronic type. A marked polyposis hyperplasia of the persisting remnants of the mucous membrane is frequent thing in ulcerative colitis. Ordinarily it seems nothing more than a hypertrophy of the persisting mucosa, but once in a while the hypertrophy or hyperplasia gets so marked that one begins to wonder if he is not dealing with a neoplastic change.

Dr. HOLMES Was there any change in the terminal ileum?

Dr. MALLORY Not directly. The cancer involved the ileocecal valve itself and there were one or two large nodes in the immediate neighborhood. That accounts for the deformity in the terminal ileum. The tumor did not extend into the ileum.

Dr. HOLMES If the terminal ileum is involved it is more likely to be tuberculosis, is it not?

Dr. MALLORY Yes, I should say that is correct.

A PHYSICIAN Would you say that polyps that develop in ulcerative colitis are more apt to be malignant than the polyps you get otherwise?

Dr. MALLORY I cannot answer you. We know very little of the time factors involved and how long the polyposis has been going on.

Dr. MILLER I have been very much interested in this matter of multiple polyposis of the colon. Some cases were reported last year of distinct familial occurrence in which a large number of people in three families had multiple polyposis and cancer of the rectum or of some other part of the colon. We have a family now that we have treated in this hospital where the father died of cancer of the rectum and two out of three children had multiple polyposis and multiple cancers involving both rectum and other parts of the colon. I agree entirely with Dr. Mallory, that in cases of chronic ulcerative colitis the mucous membrane which is left tends to overgrow and present a picture resembling

grossly multiple polyposis but which is really simply an inflammatory reaction, and I do not think that these polyps would have any particular tendency to develop into malignancy. My experience with chronic ulcerative colitis is not great, but this is the first case I have ever known of in which cancer has developed anywhere in the colon.

#### CASE 21082

##### PRESENTATION OF CASE

A fifty year old Canadian iron worker entered complaining of diarrhea vomiting and weakness of two months' duration.

Four years before entry the patient was sick for ten days with influenza. He returned to work but felt that he had never fully recovered from this illness and had remained quite weak. The following year he had four or five attacks of rather profuse diarrhea lasting two or three days and occasionally accompanied by vomiting but not by abdominal pain other than the mild colic associated with the diarrhea. He noticed no blood in his stools, and had no tenesmus or hematemesis. His appetite was fair between these attacks and his stools were normal and soft. He had never been nauseated. During the following two years these attacks became more frequent, lasted from three or four days to a week, and were associated with a sense of midepigastric soreness. He felt quite miserable. During the past year the attacks had become even more frequent and each one lasted a little longer than the previous one, the attacks before the last being of three weeks' duration, the last one six weeks. Because of these attacks he limited his diet to warm broth, milk and water. During the past year he had lost about thirty pounds in weight. Four months before entry he developed very sharp burning pain with exquisite tenderness over the course of the tendons and nerves on the dorsum of the hands, the extensor surfaces of the forearms, and possibly in the finger joints. No wrist drop was noticed. Both feet were involved to a less extent. He also noted that he had numbness and tingling of his hands and feet and that his shoulders were painful. These symptoms continued but were less prominent than at the onset. After his last attack of diarrhea, which began approximately six weeks before entry and which continued until admission, he developed marked weakness, dyspnea and palpitation on exertion and numerous dizzy spells. During this period he vomited very often, occasionally chocolate-like material. He had numerous chills and fever during this attack and frequent drenching night sweats. He had been forced to stop work during the past year.

The family history is non contributory.

He had been married thirty years. His wife and eight children were living and well. One child died of diphtheria. His wife had had six miscarriages, each occurring at two to three months.

His past history is non-contributory except for scarlet fever twenty years before entry.

Physical examination showed a pale emaciated middle-aged man in no acute distress. At times he appeared slightly euphoric. The skin was dry and pale with a slight yellow tint. His teeth were dirty and there was moderate pyorrhcea. The chest had a few râles at both bases. The heart was not enlarged, the sounds were somewhat faint. The blood pressure was 100/50. The abdomen was scaphoid and showed some spasm in the right and midepigastrium. In the epigastrium there was an ill-defined area of resistance 7 centimeters in diameter which was dull to percussion. This apparent mass did not descend with respiration although the examination was not very satisfactory. It appeared to be continuous with the liver. The liver dullness was 15 centimeters below the costal margin in the nipple line. Rectal examination was negative. The finger joints were tender, the hands were weak.

The temperature was 99°, the pulse 100. The respirations were 27.

Examination of the urine showed a specific gravity of 1.012 to 1.020, a slight trace of albumin, 3 to 6 white blood cells per high power field, and 4 to 6 hyalin and granular casts. Bence-Jones protein was not present. Examination of the blood showed a red cell count of 2,600,000, with a hemoglobin of 45 per cent. The white cell count was 12,700, 65 per cent polymorphonuclears. One, out of four stool examinations, showed a strongly positive guaiac test. A Hinton test was negative. The non-protein nitrogen of the blood was 32 milligrams. A gastric analysis showed free hydrochloric acid.

X-ray examination of the colon showed a constant narrowing along the upper surface of the distal transverse colon near the splenic flexure. The lesion produced no distinguishable evidence of involvement of the mucosa and was interpreted as being extrinsic. There was no displacement of the middle third of the stomach. The esophagus, stomach and duodenum were negative. The pelvis showed slight mottling in the region of the trochanters of both femora and both pubic bones due to minute areas of diminished density within the bones. The fourth lumbar vertebra showed some deformity interpreted as being due to old trauma. A lateral view of the skull presented an appearance similar to that seen at the lower pelvis but slightly more marked.

The diarrhea continued. No amebae were found in his stools. A proctoscopy showed an edematous pale mucosa with dilated vessels and

considerable mucus but no evidence of ulceration. He was transfused on the eleventh day and appeared somewhat brighter afterward. An other transfusion was performed during the fourth week. A gastroscopy was done and the findings suggested neoplasm. At about that time during his course in the hospital a serum protein was found to be 13.5 per cent. He began to go downhill. Another serum protein during the fifth week was 11.7 per cent. This finding led to a more intensive search for Bence-Jones protein in the urine, and it was found on two examinations. The serum calcium was 13.9 milligrams, the phosphorus 4.7, and the phosphatase 3.4 units. In addition a plasma cell blast was found in the blood smear. During the fifth week he became comatose and the temperature rose to 103°. He died on the thirty-sixth day.

#### DIFFERENTIAL DIAGNOSIS

DR WYMAN RICHARDSON "During the following two years these attacks became more frequent and were associated with a sense of midepigastic soreness." That might lead us to suppose that the lesion is not in the large bowel but higher up in the gastrointestinal tract.

"Because of these attacks he limited his diet to warm broth, milk and water." Not a very sufficient diet, but it does not say for how long a period he had been on that limited diet. It is a fair guess that these symptoms may be due to polyneuritis, in turn due to lack of vitamin B in the diet. It does not sound like bone pain to me.

The weakness, dyspnea and palpitation are new and might be due again to vitamin lack or to anemia, perhaps secondary to hemorrhage.

He has chocolate-like material in the vomitus and I think it is fair to say the chances are that he has gastrointestinal bleeding, again probably from the upper gastrointestinal tract.

In spite of my teaching that a long history of miscarriages is suggestive of syphilis, in practice I have had very little help from this historical fact.

"The skin was dry and pale, with a slight yellow tint." We can question that since there is no mention of the sclerae.

His tongue is not mentioned. I assume that it was red and fiery, but that is just my imagination.

I think the notation "some spasm" on the medical ward is probably rather different from the notation "definite spasm". I doubt if that really means that he had definite spasm.

"In the epigastrium there was an ill-defined area of resistance 7 centimeters in diameter which was dull to percussion." You can take that as a mass or not. I believe it was, because it was definitely associated with dullness.

There is no mention of reflexes or nerve tenderness. Perhaps we should assume that

they are normal, although I wonder if there might not have been some evidence of peripheral nerve involvement.

Up to this point there is not very much to establish a definite diagnosis. I have been willing to say that he had a lesion in the upper intestinal tract, probably with ulceration, that he might very probably have had a vitamin B deficiency, and that he had an anemia, that was not particularly characteristic of pernicious anemia, but that might conceivably be due to lack of the extrinsic factor. The anemia might also be due to bone marrow invasion. If this anemia were secondary to long hemorrhage it should be definitely hypochromic. It apparently is not. If it is pernicious anemia there should be a lower white count and the description of the smear is significantly left out. With this in view evidently they went ahead to try to find some evidence of marrow invasion by x ray.

#### X RAY INTERPRETATION

DR GEORGE W HOLMES This patient also had a very complete gastrointestinal study but, it is recorded in the notes that the x ray examination was negative. There is nothing in this large collection of films that would allow me to make a different diagnosis. The bones in this case are perhaps the most interesting. We have films of the pelvis, skull and spine and at this point here above the acetabulum there is a localized area of diminished density of bone with some destruction of the trabeculae. The bones are somewhat decalcified. The trabeculation appears to be irregular. When we come to the skull we have a similar appearance. The trabeculae are coarse. The skull is less dense than normal. There is occasional spotting that looks like small areas of calcification and bone destruction. You can see the same process to a less marked degree in the lumbar spine and in the rib. None of these things are marked or typical. Any of the conditions that usually produce decalcification can produce a similar picture. If I am right in my interpretation of this area here, it is the most valuable finding in the x ray examination. It can hardly be due to any of the decalcifying process. It looks more like actual destruction of bone from tumor.

#### DIFFERENTIAL DIAGNOSIS CONTINUED

DR RICHARDSON Though Dr Holmes is unable to demonstrate from the films any lesion in the intestinal tract, it is recorded that "The examination of the gastrointestinal tract by barium showed a constant narrowing along the upper surface of the distal transverse colon near the splenic flexure. The lesion produced no distinguishable evidence of involvement of the mucosa and was interpreted as being extrinsic."

That would seem to support the rather vague evidence discovered in the physical examination of an abdominal mass. I think one must also take Dr Benedict's finding, that the gastroscopy suggested neoplasm, seriously. However, the only positive result of x ray examination was that some evidence of bone marrow involvement by a tumor was discovered.

We have a man with a very high serum protein, in whose urine Bence-Jones protein was eventually discovered, and with x rays suggesting some bone involvement. The evidence is therefore very strongly in favor of myeloma. I think that metastatic malignancy from other causes can give Bence-Jones protein in the urine, but I do not think it can give such a high serum protein, at least I have never heard of it. The x ray evidence, the anemia, the high serum protein, the Bence-Jones protein, and the one plasma cell in the blood smear should establish the diagnosis of myeloma.

As to the cause of symptoms, I think we must assume a gastrointestinal lesion in the upper intestinal tract, at least I would assume it. It is unusual but not unheard of to find a myeloma tumor outside the bone marrow. I am going to say that he has an ulcerative lesion in the stomach and upper intestinal tract. I think that he had vitamin B deficiency and anemia. All of these things will account for the symptoms. I hope that Dr Albright will explain the calcium findings.

My diagnosis is multiple myeloma, probably plasma cell type, with involvement of the stomach and upper gastrointestinal tract and vitamin B deficiency.

#### CLINICAL DISCUSSION

DR FULLER ALBRIGHT I do not think the answer to why you have a high serum calcium in these conditions is altogether known. There are two possibilities. One is that the tumor is destroying a large amount of bone, resulting in more calcium and phosphorus entering the blood stream. This, together with the fact that the kidneys are often damaged so that their ability to excrete these substances may be impaired, would seem to offer an explanation of the high serum calcium and phosphorus value. I always supposed that was the cause, and it fits in with the fact that you get deposits of calcium in other tissues than bone. Very often in people who die you get calcium deposits in the lungs, in the mucous membrane of the stomach and in the kidneys. This fact suggests that the blood fluid contains more than the normal amount of calcium and phosphate ions. The other explanation is that the high serum protein As you know, part of the calcium is held in a non ionized form as serum protein. Now that we have a method of

**MISCELLANY****REPORT OF THE REFERENCE COMMITTEE**

SPECIAL SESSION HOUSE OF DELEGATES,  
FEBRUARY 15 AND 16, 1935

Your reference committee, believing that regimentation of the medical profession and lay control of medical practice will be fatal to medical progress and inevitably lower the quality of medical service now available to the American people, condemns unreservedly all propaganda, legislation or political manipulation leading to these ends.

Your reference committee has given careful consideration to the record by the Board of Trustees of the previous actions of this House of Delegates concerning sickness insurance and organized medical care and to the account of the measures taken by the Board of Trustees and the officials of the Association to present this point of view to the government and to the people.

The American Medical Association, embracing in its membership some 100,000 of the physicians of the United States, is by far the largest medical organization in this country. The House of Delegates would point out that the American Medical Association is the only medical organization open to all reputable physicians and established on truly democratic principles, and that this House of Delegates, as constituted, is the only body truly representative of the medical profession.

The House of Delegates commends the Board of Trustees and the officers of the Association for their efforts in presenting correctly, maintaining and promoting the policies and principles, heretofore established by this body.

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, the preservation of their health and their care in sickness, the advancement of medical science, the improvement of medical care, and the provision of adequate medical service to all the people. These physicians are the only body in the United States qualified by experience and training to guide and suitably control plans for the provision of medical care. The fact that the quality of medical service to the people of the United States to-day is better than that of any other country in the world is evidence of the extent to which the American medical profession has fulfilled its obligations.

The House of Delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the Federal government, the governments of the individual states or by any individual industry, community or similar body. It reaffirms, also, its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all of the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness.

The medical profession has given of its utmost to the American people, not only in this but in every previous emergency. It has never required compulsion but has always volunteered its services in anticipation of their needs.

The Committee on Economic Security, appointed by the President of the United States, presented in a preliminary report to Congress on January 17 eleven principles which that Committee considered fundamental to a proposed plan of compulsory health insurance. The House of Delegates is glad to recognize that some of the fundamental considerations for an adequate, reliable and safe medical service established by the medical profession through years of experience in medical practice are found by the Committee to be essential to its own plans.

However, so many inconsistencies and incompatibilities are apparent in the report of the President's Committee on Economic Security thus far presented that many more facts and details are necessary for a proper consideration.

The House of Delegates recognizes the necessity under conditions of emergency for federal aid in meeting basic needs of the indigent, it deprecates, however, any provision whereby federal subsidies for medical services are administered and controlled by a lay bureau. While the desirability of adequate medical service for crippled children and for the preservation of child and maternal health is beyond question, the House of Delegates deplores and protests those sections of the Wagner Bill which place in the Children's Bureau of the Department of Labor the responsibility for the administration of funds for these purposes.

The House of Delegates condemns as pernicious that section of the Wagner Bill which creates a social insurance board without specification of the character of its personnel to administer functions essentially medical in character and demanding technical knowledge not available to those without medical training.

The so-called Epstein Bill, proposed by the American Association for Social Security now being promoted with propaganda in the individual states, is a vicious, deceptive, dangerous and demoralizing measure. An analysis of this proposed law has been published by the American Medical Association. It introduces such hazardous principles as multiple taxation, inordinate costs, extravagant administration and an inevitable trend toward social and financial bankruptcy.

The committee has studied this matter from a broad standpoint, considering many plans submitted by the Bureau of Medical Economics as well as those conveyed in resolutions from the floor of the House of Delegates. It reiterates the fact that there is no model plan which is a cure-all for the social ills any more than there is a panacea for the physical ills that affect mankind. There are now more than 150 plans for medical service undergoing study.

and trial in various communities in the United States. Your Bureau of Medical Economics has studied these plans and is now ready and willing to advise medical societies in the creation and operation of such plans. The plans developed by the Bureau of Medical Economics will serve the people of the community in the prevention of disease, the maintenance of health and with curative care in illness. They must at the same time meet apparent economic factors and protect the public welfare by safeguarding to the medical profession the functions of control of medical standards and the continued advancement of medical educational requirements. They must not destroy that initiative which is vital to the highest type of medical service.

In the establishment of all such plans county medical societies must be guided by the ten fundamental principles adopted by this House of Delegates at the annual session in June 1934. The House of Delegates would again emphasize particularly the necessity for separate provision for hospital facilities and the physician's services. Payment for medical service whether by prepayment plans, installment purchase or so-called voluntary hospital insurance plans must hold as absolutely distinct, remuneration for hospital care on the one hand and the individual, personal scientific ministrations of the physician on the other.

Your Reference Committee suggests that the Board of Trustees request the Bureau of Medical Economics to study further the plans now existing and such as may develop with special reference to the way in which they meet the needs of their communities, to the costs of operation, to the quality of service rendered, the effects of such service on the medical profession, the applicability to rural, village, urban and industrial population and to develop for presentation at the meeting of the American Medical Association in June model skeleton plans adapted to the needs of populations of various types.

(Signed)

DR. HARRY H. WILSON Chairman, California,  
DR. WARREN F. DRAPER, Virginia,  
DR. E. F. CODY Massachusetts,  
DR. E. H. CAREY Texas  
DR. N. B. VAN ETEN New York,  
DR. F. S. CROCKETT Indiana,  
DR. W. F. BRAESCH, Minnesota.

#### DR. FAXON TO BE THE DIRECTOR OF THE MASSACHUSETTS GENERAL HOSPITAL

In order to fill the vacancy caused by the absence of Dr George H. Bigelow Dr Nathaniel W. Faxon has been appointed Director of the Massachusetts General Hospital.

Dr Faxon was born in Braintree in 1880 graduated from Harvard College in 1902, and from the Harvard Medical School in 1905. He served as intern at the Massachusetts General Hospital, practiced with his father for a time in Stoughton Massa-

chusetts served as a member of the local board of health as instructor in surgery at Tufts College Medical School and during the World War served in the Aisne-Marne operations as well as in other positions at the front. He subsequently occupied the position of Assistant Director to Dr F. A. Washburn. Since 1923, Dr Faxon has been director of the Strong Memorial Hospital at Rochester New York where he was recognized as an able administrator.

In returning to Boston, Dr Faxon will be cordially received by the medical profession.

#### THE RETIREMENT OF DR. WINTERNITZ

The report that Dr Milton C. Winternitz Dean of the Yale Medical School will retire from the position in June of this year is current. Dr Stanhope Bayne-Jones Professor of Bacteriology has been appointed to succeed Dr Winternitz.

During Dr Winternitz administration the endowment of the Yale School of Medicine has been increased from about two million to over eight million by gifts.

Dr Bayne-Jones received his A.B. degree from Yale and his M.D. from Johns Hopkins.

Dr Winternitz will continue as Professor of Pathology.

#### CORRESPONDENCE

##### A TRIBUTE TO DR. H. S. WAGNER

Editor *New England Journal of Medicine*

One spring morning a few years ago there came to my office a sprightly kindly faced man who introduced himself as Dr Wagner from Barnstable County Sanatorium Pocasset, Mass. He had come to discuss a number of cases he was treating with pneumothorax. He was thoroughly versed in his subject and extremely earnest. As the conversation progressed we became cordial friends for there was much in common in our views and the course to pursue in treating pulmonary tuberculosis. That was the first of many meetings at my office, at the Massachusetts General Hospital and my occasional visits at Pocasset.

Dr Wagner was one of those who endeared himself to his patients and to all others with whom he came in contact. He was never assertive in his manner though thoroughly familiar with his subject and ever ready to seek advice for the benefit of his patients. His untimely death, in his mature years has robbed the community to which he devoted himself, of an able inspiring physician who gave of himself unsparingly to his patients.

He had a charming personality and in his death we have lost a friend and delightful companion.

GIRALDO M. BILBOY, M.D.

February 9 1935

**RECENT DEATHS**

**HOEY** — WARREN HENRY HOEY, M.D., of 65 Oak Street, Newton Upper Falls, died at his home, December 31, 1934. He was born in 1881 and graduated from the Harvard Medical School in 1902.

He joined the Massachusetts Medical Society in 1920.

**WHITING** — GEORGE WASHINGTON WHITNEY WHITING, M.D., of 50 Sagamore Avenue, West Medford, Mass., died February 14, 1935. He was born in Carmel, Maine, in 1864, and after being educated at a preparatory school and at Bowdoin College, matriculated at the New York University Medical School, graduating in 1887. He settled in West Medford where he developed a considerable practice which included Somerville. Dr Whiting was a member of the Somerville Hospital Staff for many years and consulting physician at the Lawrence Memorial Hospital in Medford.

He was a Fellow of the Massachusetts Medical Society and the American Medical Association.

He is survived by his widow, Mrs Alice Hoyt Whiting, a daughter, Miss Carol Whiting, a son, Richard Whiting, of Medford, and a sister, Mrs Elizabeth Knight, of Carmel, Maine.

**OBITUARY****RESOLUTIONS ON THE DEATH  
OF DR C H. DOBSON**

Whereas, In the death of Clarence Henry Dobson, our hospital has lost an honored and efficient member, held in high esteem, and

Whereas, We, the Staff of the Massachusetts Memorial Hospitals, keenly feeling our loss, desire to express our appreciation of his kindly qualities, his cooperation with his colleagues and his patients, his loyalty to our Hospital and School, and to extend our sympathy to his family.

Therefore, Be it resolved that this resolution be entered upon our records and copies sent to Dr Dobson's family, and to *The New England Journal of Medicine*.

Respectfully submitted,  
WILSON F PHILLIPS,  
WILLIAM D ROWLAND,  
FRANK H. BARTON,  
Committee.

**NOTICES****CLINIC AT THE PETER BENT BRIGHAM  
HOSPITAL**

At 3 30 PM on Thursday, February 28, in the Amphitheatre of the Peter Bent Brigham Hospital, Dr E S Emery, Jr., will give a clinic on "The Treat-

ment of Peptic Ulcer." To it are cordially invited practitioners and medical students.

On Saturdays in the wards of the Peter Bent Brigham Hospital, from 10 to 12, staff rounds will be conducted by Dr Christian. These are open to all physicians.

**LECTURES AT THE YALE UNIVERSITY SCHOOL  
OF MEDICINE**

Another lecture in the series on the backgrounds of medical practice, sponsored by the Department of Public Health at the Yale University School of Medicine, has been announced for March 4. Professor Edward Sapir, head of the department of Anthropology at Yale University, will speak on "Human Beings as Personalities." The first three lectures in the series were given by Professor Henry E. Sigerist of Johns Hopkins University last month, and the fourth by Professor Sapir on February 18.

The purpose of the series is to help medical students, especially, to gain a broader view of human society and the rôle which medicine plays in it.

**AWARD**

The New England Society of Psychiatry, at its next Spring meeting will make two awards, one of \$100.00 and one of \$50.00, to the writer (or writers) of the best papers completed or published during the calendar year of 1934 embodying research in psychiatry by a younger worker (or workers). Physicians, psychologists, social workers, and others are eligible. Membership in the Society is not a requisite.

Writers who have once received an Award are not again eligible. Seasoned writers, senior physicians, or heads of departments in which there are junior workers, while not inevitably excluded, will not generally be regarded as eligible for the Awards.

The work on which the papers are based should preferably have been done in New England or by workers now living in New England.

The papers will be examined by a Committee of three members who are accustomed to reviewing papers, and by the Executive Committee of the Society. They will be judged on the basis of their scientific quality.

Copies of articles or marked copies of journals in which the articles appeared should be sent before March 15, 1935, to the Secretary of the Society.

Superintendents of institutions, public or private, for the care of mental patients in New England are requested to post this notice and to send to the Secretary a list of such papers published by the members of their staffs as they think entitled to be considered for the Awards.

HARLAN L. PAINE, M.D., *Secretary*  
North Grafton, Mass.

## REPORTS AND NOTICES OF MEETINGS

### CLINICAL MEETING OF THE MASSACHUSETTS GENERAL HOSPITAL

A clinical meeting was held at the Massachusetts General Hospital on the evening of January 17. Dr Allen called the meeting to order and Dr Soley presented a case of a thirty five year old Negro who has had intermittent attacks of asthma since he had influenza in 1918. It has occurred in several localities and at all times of year and he has a positive skin test for timothy and ragweed. On three occasions attacks have followed the administration of aspirin and this was the precipitating factor in the present attack. He had been in the hospital for one week suffering from status asthmaticus and was too ill to be present in person.

The first paper of the evening was on the subject of "Asthma in Children" and was presented by Dr E. S. O'Keefe. In this analysis of three hundred cases in patients under fourteen years of age, it was found that some cases developed as early as the second month of extrauterine life that ten per cent had begun in the first year and that sixty six per cent had started in the first six years of life. A positive family history for allergy did not change the average age of onset. Thirty-eight per cent had a positive family history and in this group it was found that they were more prone to develop other allergic manifestations than those who had a negative allergic family history. Apparently it is the tendency for allergic families to transmit the same allergic condition to their offspring rather than other similar allergic diseases. The pollen as etiological factors in the asthma of children are unimportant before the ninth year after which they become of major import. In the early years of life the food allergies are most frequent, and eggs, wheat, milk and potatoes are the chief offenders. In adult life perhaps due to a natural desensitization, the foods are of less significance in the etiology of asthma.

Dr B. T. Guild spoke on "Eczema as an allergic manifestation both localized and generalized. It may be hereditary or acquired and the clinical picture may be confused by secondary infection. An extensive allergic history which should require some two and one-half hours to take is of the utmost importance. Scratch intradermal, and patch tests should be done and infectious foci must be eliminated. Fifty per cent of these cases are well on the way to recovery some two or three days after hospitalization, but their difficulty often returns almost immediately when they go home. Allergic eczema may be due to contact or inhalation or ingestion of substances to which the patient is sensitive. Dyes, fungi, and metals, as well as numerous other factors, are important as etiological agents in allergic dermatitis.

Dr A. Colmes spoke on "Skin Tests" and pointed out the many difficulties encountered in drawing

definite conclusions from these. Tests which are repeated at a different time and in different places on the skin often change from negative to positive and vice versa. A number of slides were shown to demonstrate these facts and one case was mentioned where a patient gave a positive skin test for beans at one site but this same test was negative at twelve other sites. A careful correlation with symptoms showed that in asthma only forty per cent of the positive skin tests were of importance in vasomotor rhinitis twenty-five per cent were of importance in urticaria four per cent in hay fever almost one hundred per cent. Of the whole group only twenty-seven per cent of the positive tests were of clinical importance. It is seen from this study that, although the skin test is of definite value in hay fever it is of comparatively little value in asthma and vasomotor rhinitis and it is of no importance in urticaria.

Dr F. M. Rackemann gave a discussion of "Common Allergens". He pointed out the increasing importance of the history and the decreasing significance of the skin test. Four out of five cases of asthma entering the Massachusetts General Hospital quickly recover because they have been removed from the causative factor which is usually present in their homes. House dust and "kapok" are "poor allergens" because they give doubtful reactions in a great many people and are therefore hard to interpret. A good allergen gives a typical wheal in a few cases and a negative reaction in most cases of routine testing.

If a person is sensitive to a great many animal sera and is desensitized with guinea pig serum he becomes desensitized to all the other animal sera at the same time. It seems therefore that there are two factors in all animal sera one of which factors is common in all mammalian species, the other one being specific for each species.

"Kapok" is often called silk floss and is a cheap stuffing material for furniture and bedding in particular pillows and mattresses. It is a very common cause of asthma and when the patients are removed from its presence their symptoms clear rapidly. It comes from a tropical plant, and when new consists of long fibres which do not cause trouble. However it is infected with a mold which gradually causes the breakdown of the fibres into small particles that arise as dust and are responsible for the clinical symptoms. It may be that the mold is responsible for the skin reactions.

In considering the drug group of allergens, it is always wise to believe one's patients and not to give them drugs to which they say they are sensitive, for there is a small but definite group that cannot take such drugs as aspirin without a severe reaction.

Dr Hill gave a short discussion in which he distinguished four types of eczema: first, seborrheic eczema; secondly, atopic (mostly infantile); thirdly, contact and fourthly mycotic eczema. Most adult eczema is of the contact variety where there

is a sudden onset and no family history. The sensitivity in this type is in the epidermis, so that patch tests are positive, while scratch tests are negative. There is a vesiculation usually which gives an appearance similar to poison ivy. Infection with the fungi may be primary or superimposed upon an eczema, and the most common offenders are the mycelia and the trichophyton.

#### HARVARD MEDICAL SOCIETY

On January 22 a meeting of the Harvard Medical Society was held at the Peter Bent Brigham Hospital. Dr Merrill C Sosman presided. The first case was presented by Dr Ingalls. A forty-two year old carpenter first complained of the symptoms of peptic ulcer seven years ago, and experienced the sudden pain of a perforation two years later. A posterior gastro-enterostomy was done, and five years ago he developed diarrhea at which time an x ray showed a gastrocolic fistula which was repaired. Last April he again developed symptoms of peptic ulcer. A physical examination was essentially negative, the stool showed a one plus guaiac, the free acid was ninety three and the total one hundred and ten. Dr Emery in a discussion of this case said that the flushed face, the bright eyes, and moist palms are those of a type of individual who is prone to develop jejunal ulcers, and he has seen two other similar cases with a gastrocolic fistula. This group of patients is also likely to develop alkalosis while on Sippy management. Dr Sosman pointed out the x ray evidence of thickened, hypertrophic rugae indicative of gastritis.

Dr Reiter presented a forty eight year old male who, thirty six hours before entry, had experienced an annoying epigastric pain relieved by supper, and four hours later a severe colicky pain in the same region radiating to both shoulders. For twenty years he had had the dull pain of an ulcer, and had been a known diabetic for four years. At a local hospital he was diagnosed as a psychoneurotic. Physical examination showed tenderness and spasm in the right upper quadrant. He had a white count of 11,000 with ninety per cent polymorphonuclears, a four plus sugar, and a one plus acetone in his urine, as well as a temperature of one hundred. His temperature was ninety-nine and two-tenths degrees, and his white count 19,000, his chest and abdomen were negative by x-ray. Dr Homans discussed the diagnosis and suggested the possibility of appendicitis, although the patient remarked that his appendix had been removed in 1898. Nevertheless, Dr Cheever upheld the possibility of Dr Homans' diagnosis by saying that the appendix is not infrequently present when the patient believes it to be out, or the appendix stump is the seat of an inflammatory process.

Dr Cutler spoke briefly on the Emergency Campaign.

Dr J Schloss from the New England Medical Center spoke on "Gastroscopy and Optic Esophagoscopy". Kussmaul successfully visualized and correctly diag-

nosed a carcinoma of the stomach, but after several fatalities he gave up the procedure. In 1932 Wolff invented a new flexible gastroscope with a system of lenses in a semi-rigid tube constructed in a fish scale manner. This instrument is now used with safety in a number of clinics particularly in Europe. Its use requires considerable experience, and after anesthesia of the mouth and pharynx, it is introduced into the esophagus with the patient lying on his left side. Dr Schloss discussed the optics involved, and said that the retrograde optic allows a good view of regions invisible by a straight tube, but the problem of visualizing the posterior wall has not yet been solved. He also demonstrated a new esophagoscope which is much smaller than the old type, and which employs a rubber finger cot over the end which can be blown up, so as to afford a view of the wall of the distended esophagus, thus giving much better optical effect.

In speaking of the need for gastroscopy the speaker pointed out that gastric ulcers are frequently not seen by the x ray, and that severe gastritis alone can cause pain. In a series of excellent lantern slides, pictures of the normal gastric mucosa and of chronic gastritis as seen through the gastroscope were shown. He concluded by speaking of the value of this instrument from the point of view of clinical investigation, as well as diagnosis, and then showed several pictures of ulcer and carcinoma as they appear through this instrument.

Dr Richard Schatzki from the Massachusetts General Hospital spoke on "The X Ray Findings in Finer Lesions of the Stomach and Their Relationship to Gastroscopy". After a brief review of the development of the x ray and its use in diagnosis, he discussed the modern method of recognizing slight changes in the gastric mucosa by the relief method of a thin coating of barium which fills the valleys of the mucosa only. The rugae on the anterior wall are normally more pliable and slightly more tortuous than those on the posterior wall. In gastritis the rugae become wider, higher, more tortuous, and more rigid. The x ray diagnosis of hypertrophic gastritis does not always correspond with the same diagnosis of the gastroscopist, since there are a few cases where actual visualization shows the mucosa to be either normal or atrophied. One cannot say that a negative x ray excludes gastritis, positive findings are more conclusive. The ulcerative type of gastritis is very difficult to show by x ray, as the ulcerations are very shallow, and there is a good deal of secretion. An x-ray diagnosis must never be made on one sign without the support of others. The gastroscope is a definite aid to the roentgenologist in visualizing gastritis which is rarely seen at autopsy.

The advantages of the gastroscope over the x ray are chiefly in the finer changes, although the distinction of color is of definite aid. Advantages of the x ray are that it is easier, more practical, and one can visualize all the parts of the stomach, while

some areas cannot be seen with the gastroscopos. The description of the extent of a lesion by x-ray is easier and the observation of peristalsis as well as palpation and rigidity make the x-ray superior in diagnosing changes of the deeper layers of the stomach wall.

In conclusion it may be said first, that a large number of cases of gastritis are entirely negative to x-ray and a few are wrongly diagnosed. Secondly that large ulcers are easier to demonstrate by x-ray but small ones together with malignant changes in an ulcer are more readily diagnosed by the gastro-scope and thirdly, tumors are more definitely diagnosed by x-ray although when very small the gastro-scope is superior. There is no doubt but that the most desirable procedure is to have these two methods of diagnosis supplement each other.

In the discussion which followed, Dr Cutler asked the pathological significance of gastritis to which Dr Schatzki answered that it is difficult to say where pathological changes begin but that the true picture represented a real inflammation. In answer to Dr Homans he said that it is rare to find definite gastritis without subjective symptoms and that gastritis is both an anatomical and clinical disease.

#### PHI DELTA EPSILON FRATERNITY

The next Open Meeting of the Phi Delta Epsilon Fraternity of Boston University School of Medicine will be held on Monday February 25 at the Massachusetts Memorial Hospitals (Evans Auditorium) 80 East Concord Street, at 8 P.M.

#### PROGRAM

**Speaker** Dr W B Castle, Associate Professor of Medicine Harvard Medical School  
**Subject** A Modern Classification of the Anemias.  
**Discussion** Dr H. Ulrich Associate Professor of Clinical Pathology Boston University School of Medicine.  
**Chairman** Dr A S Begg Dean, Boston University School of Medicine  
 - SYDNEY GRACE,  
 Chairman of Program Committee.

#### MASSACHUSETTS GENERAL HOSPITAL

CLINICAL MEETING THURSDAY FEBRUARY 28 1935

Moseley Memorial Building 8 15-10 PM

#### PROGRAM

- Subject** Physicians Patients and Pay
1. A Summary of the Problem as a Whole Channing Frothingham, M.D., Physician-in-Chief Faulkner Hospital
  2. Accomplishments in Other Communities and Countries. Douglass Brown Assistant Professor Medical Economics Harvard Medical School.
  3. Legislative Trends Local and National Alexander S Begg M.D., Dean Boston University School of Medicine

Physicians medical students nurses and social workers are cordially invited.

#### Committee on Hospital Meetings

ARTHUR W ALLEN Chairman  
WILLIAM B BAXXO Secretary

#### MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

A meeting will be held at noon in the Hotel Continental, Cambridge Mass., on Thursday March 7 1935

The speaker will be Dr Harold A. Chamberlin, Professor of Urology at the Tufts College Medical School

Topic Hematuria — Its Significance as a Symptom. Illustrated by lantern slides

The medical paper will be preceded by a luncheon and business meeting.

ALEXANDER A. LEVI M.D. Secretary

#### GREATER BOSTON BIKUR CHOLIM HOSPITAL

The medical staff of the Greater Boston Bikur Cholim Hospital will hold its next regular meeting on Wednesday evening February 27 at 8 30 o'clock, at 45 Townsend Street, Roxbury. Dr Herman L. Blumgart will speak on "Total Thyroidectomy as a Therapeutic Measure in Cardiac Diseases." Members of the medical profession are invited.

MAURICE GEESTLIN M.D.,  
 Chairman of Staff  
 NATHAN FREIDMAN, M.D.  
 Secretary of Staff.

#### GREATER BOSTON MEDICAL SOCIETY

Wednesday March 13 1935 Postgraduate Clinic Day at Beth Israel Hospital  
 Symposium on Diabetes Mellitus, 9 30 A.M. 12 30 P.M.

Luncheon, 12 30-1 30 P.M.  
 Symposium on Biliary Tract Diseases, 1 30 P.M. 4 30 P.M.

The Annual Dinner Dance will be held at the Copley Plaza Hotel.

Apply to David B. Stearns M.D. 485 Commonwealth Avenue Boston Mass., for particulars.

#### HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance) Tuesday evening February 26 at 8 15 P.M.

#### PROGRAM

##### Presentation of Cases.

Your Profession and Society By Dr John A. Hartwell, Professor of Clinical Surgery Cornell University Medical School, former President of New York Academy of Medicine.

MARSHALL N FULTON M.D. Secretary

**SOCIETY MEETINGS,  
CONGRESSES AND CONFERENCES**

**CALENDAR OF BOSTON DISTRICT FOR THE WEEK  
BEGINNING MONDAY, FEBRUARY 25, 1935**

**Monday, February 25—**

- \*8 30 A.M. Lecture and Clinic on Heart Disease by Dr Christian Peter Bent Brigham Hospital
- 8 P.M. Phi Delta Epsilon Fraternity Massachusetts Memorial Hospitals, 80 East Concord Street, Boston
- 8 15 P.M. New England Heart Association. Children's Hospital, Boston

**Tuesday, February 26—**

- 1 30 P.M. Radio Program—WEEL "Nuisances"
- 12 30-4 P.M. Ward visit, Massachusetts Eye and Ear Infirmary
- 14-5 P.M. Seminar, Pediatric Laboratory, Massachusetts General Hospital
- 4 30 P.M. Radio Program—WBZ "Pulmonary Tuberculosis"
- 8 15 P.M. Harvard Medical Society Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance)

**Wednesday, February 27—**

- 8 P.M. Massachusetts Psychiatric Society Boston Psychopathic Hospital
- \*8 30 P.M. Greater Boston Bikur Cholim Hospital, 45 Townsend Street, Roxbury

**Thursday, February 28—**

- \*12 M. Clinico-Pathological Conference Massachusetts General Hospital
- \*12 M. Clinico-Pathological Conference Children's Hospital
- \*3 30 P.M. Medical Clinic Dr E S Emery, Jr Peter Bent Brigham Hospital
- 14 30 P.M. Surgical Clinic. Children's Hospital Amphitheatre
- \*8 15-10 P.M. Massachusetts General Hospital, Clinical meeting Moseley Memorial Building

**Friday, March 1—**

- \*12 M. Clinical meeting of Children's Medical Staff, Massachusetts General Hospital Ether Dome
- 5 P.M. Radio Program—WEEL Asthma

**Saturday, March 2—**

- \*10-12. Medical Staff Rounds Dr Christian Peter Bent Brigham Hospital

**Sunday, March 3—**

- 4 P.M. Harvard University (Medical School Building D, Longwood Avenue, Boston) Free lecture "Cancer" Dr E C Cutler

\*Open to the medical profession

\*Open to Fellows of the Massachusetts Medical Society

February 25—New England Heart Association will meet at the Children's Hospital, Boston, at 8 15 P.M.

February 25—Phi Delta Epsilon Fraternity See page 365

February 26—Harvard Medical Society See page 365

February 27—Massachusetts Psychiatric Society will meet at the Boston Psychopathic Hospital at 8 P.M.

February 27—Greater Boston Bikur Cholim Hospital. See page 365

February 28—Clinic at the Peter Bent Brigham Hospital. See page 362

February 28—Massachusetts General Hospital, Clinical Meeting See page 365

March May—International Medical Postgraduate Courses in Berlin. Programs and further particulars are obtainable from the Berlin Academy for Medical Postgraduate Training Berlin NW7, Robert Koch-Platz 7 (Kaiserin Friedrich-Haus)

March 8—William Harvey Society Dr Percy S Pelouze, University of Pennsylvania, will speak on "Nelsseriana."

March 11, 12, 13—Surgeons to meet in Jacksonville, Florida (Southeastern Surgical Congress) See page 83, issue of January 10

**MASSACHUSETTS DIETETIC ASSOCIATION**

March 12—Tuesday, 8 P.M. "The Effect of Diet on Anemia," Dr Lewis Diamond Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital.

March 19—Tuesday 2 P.M. Field Trip Visit Storehouse, First National Stores.

April 9—Tuesday, 8 P.M. "Small Hospital Problems," Miss Margaret Copeland, Superintendent, Free Hospital for Women

March 13—Greater Boston Medical Society See page 365

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr E R Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester, N.Y. For details, address the Secretary Miss Frances N.A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass

June 27-29 Inc—British National Association for the Prevention of Tuberculosis will be held at Southport, England Persons desiring further information should write to Miss F. Stickland, Secretary of the Association at Tavistock House North, Tavistock Square, London, W.C.I., England

July 22-27—Seventh International Congress on Industrial Accidents and Diseases, Brussels, Belgium. The American Committee of the Congress is under the chairmanship of Dr Fred H Albee, New York, for the Section on Accidents, and that of Dr Emery R. Hayhurst, Columbus, Ohio, for Industrial Diseases. The American delegation to the Congress will sail from New York on July 8 and visit London, Amsterdam, The Hague and Paris, and, optionally, Budapest. Physicians interested in the Congress or in the medical tour in conjunction with it, may address the Secretary, Dr Richard Kovacs, 1100 Park Avenue, New York City

**DISTRICT MEDICAL SOCIETIES**

**ESSEX NORTH DISTRICT MEDICAL SOCIETY**

The Annual Meeting will be held in May Time, place and subject to be announced.

E S BAGNALL, M.D., Secretary

**FRANKLIN DISTRICT MEDICAL SOCIETY**

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel, Greenfield, Mass

CHARLES MOLINE, M.D., Secretary

**MIDDLESEX EAST DISTRICT MEDICAL SOCIETY**

March 13—Wakefield

May 8—Winchester

K L MACLACHLAN, M.D., Secretary

1 Bellevue Street, Melrose

**MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY**

March 7—See page 365

**NORFOLK DISTRICT MEDICAL SOCIETY**

February 26—Hotel Kenmore, Boston, at 8 15 P.M

March 26—Fernald School for Feeble-Minded, Waverley Details to be announced

May—Annual Meeting Date, time and place to be announced

**PLYMOUTH DISTRICT MEDICAL SOCIETY**

March—Plymouth County Hospital.

April—Lakeville Sanatorium

**SUFFOLK DISTRICT MEDICAL SOCIETY**

March 27—Clinical Meeting at the Boston Lying-In Hospital.

April 24—Clinical Meeting at the Children's Hospital. The medical profession is cordially invited to attend these meetings.

ROBERT L DeNORMANDIE, M.D., President.  
GEORGE P REYNOLDS, M.D., Secretary

**WORCESTER DISTRICT MEDICAL SOCIETY**

March 13—Wednesday evening The Memorial Hospital, Worcester, Mass 6 30 P.M. Buffet supper 7 30 P.M. Scientific program and business session Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital

April 10—Wednesday evening Worcester Hahnemann Hospital, Worcester, Mass 6 30 P.M. Dinner 7 30 P.M. Scientific program and business session Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital

May 8—Wednesday afternoon and evening Annual Meeting of the Worcester District Medical Society The time and place of this meeting will be announced later

ERWIN C MILLER, M.D., Secretary  
27 Elm Street, Worcester

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## THE VISUAL MECHANISM IN DIABETES MELLITUS

(A Comparative Study of 2002 Diabetics, and 457 Non Diabetics  
for Control)

BY J HERBERT WAITE, M.D. \* AND WILLIAM P BEETHAM, M.D. \*

### I INTRODUCTION

THE use of insulin has wrought a striking change in the diet, the weight, and the prolongation of life of the co-operative diabetic and at the same time it has altered the type of complications in diabetes. With insulin Joslin states that coma as a cause of death among diabetics has fallen from sixty per cent to four per cent, whereas vascular disease as a cause of death in diabetes has risen from seventeen per cent to nearly fifty per cent. Thus through regulation of the carbohydrate metabolism and of the water and salt metabolism insulin carries the patient through the hazards of the early stages of diabetes into a period made safer through education in a diabetic régime and safer because of the fact that diabetes grows milder in older people.

At the outset, it must be recognized that all ocular abnormalities in diabetics need not be the result of diabetic processes but that such abnormalities may occur quite incidentally in diabetics as a result of other causes such as embryological abnormalities, toxins, endocrine upsets, and tissue senility. In order to make a clinical study of causes of ocular abnormalities, it has seemed to us desirable to apply searching examinations alike to diabetics and non-diabetics, to gather numbers sufficient to be of statistical value, to correlate the eye findings with the medical findings, and finally to draw deductions from a careful study of the data obtained. To carry out the purposes of this study, we have examined and wish to report the findings obtained in 2002 diabetics from the New England Deaconess Hospital, and in 457 non-diabetics from the Massachusetts General Hospital.

We are grateful to Dr Elliott P Joslin who provided every facility to make this study possible, and who gave freely of his time and counsel. We are indebted to Dr Joslin and his associates for free access to the patients and the medical records of the diabetic series, to Dr J Howard Means for the patients and the medical records of the non-diabetic series to the

Chemical Foundation for funds secured through the intermediation of Dr Joslin to subsidize the work through the years 1930-33, to Dr Edwin B Wilson and Dr Carl R Doering, of the Harvard School of Public Health, for their helpful cooperation in the statistical analysis, and to Miss Dorothy Donnell, R.N., Miss Lennie Carl son, R.N., and Miss Harriet Hall, R.N., for their help with records and perimetry.

Each diabetic patient received a careful refraction, a record of the function of the extrinsic and intrinsic ocular muscles, peripheral visual fields by perimeter, blind spots and central fields by tangent screen, a study with dilated pupils of the anterior segment of each globe by slit lamp and of each posterior segment by ophthalmoscope, and finally a Schiotz tonometer reading for each eye. Each non-diabetic patient received a pinhole vision record for each eye, and a study with dilated pupil by slit lamp of the anterior ocular segment and by ophthalmoscope of the posterior ocular segment. The recorded medical data embraced heart size (determined by percussion and by x ray plate), condition of peripheral vessels (determined by palpation and x ray), blood pressures, infections, blood sugar, NPN, cholesterol, and calcium, urinary constituents, insulin and when available the electrocardiogram, basal metabolic rate, carbon dioxide combining power and renal function tests.

Although many of the patients received subsequent medical and ocular examinations, the findings reported in this paper include only the first medical and ocular examination, except where indicated. The recorded medical and ocular examinations were always consecutive, and represented the conditions found at one hospitalization. The presence of visual difficulties was noted in five per cent of the Joslin patients as the chief reason for attendance at the clinic. In the non-diabetic material here reported, there was not a single instance of visual difficulty as the leading symptom.

Medical and ophthalmological findings for each patient were recorded in full in three places: individual record cards, ledgers, code sheets and punched cards. The individual record cards, alphabetically filed, provided a ready means for follow up of the entire eye situation, some of the patients having received a dozen

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eye examinations during the course of the work. The ledgers, grouping the patients by decades of age, displayed the first medical and ocular findings in tabular form, which facilitated correlation. The punched cards, each patient's card being derived from a code sheet and having space for 540 possible entries, provided the means for sorting and analysis of the medical and ocular data. Sorting was done at the rate of 400 cards per minute through the use of the Hollerith electric sorting machine. From the sorted material, graphs and tables were constructed to depict the incidence of ocular complications in diabetics and non-diabetics, and to bring out the relationships between ocular and general medical findings.

The most significant method of analyzing the

1705 diabetics and 457 non-diabetics of comparable ages.

Age	Diabetics	Non Diabetics
Under 20	297	
20-39	302—17%	75—16%
40-59	776—45%	269—58%
60 up	627—36%	113—25%
		—
	2002	457

The onset of diabetes occurred in two-thirds of the 2002 diabetics of this series after the fortieth year of life, and before the fortieth year in one third of the total. Plates I and II bear evidence in higher blood sugar levels and greater insulin requirements that severe diabetes occurred in the young diabetics, and that diabetes became milder in older patients. The

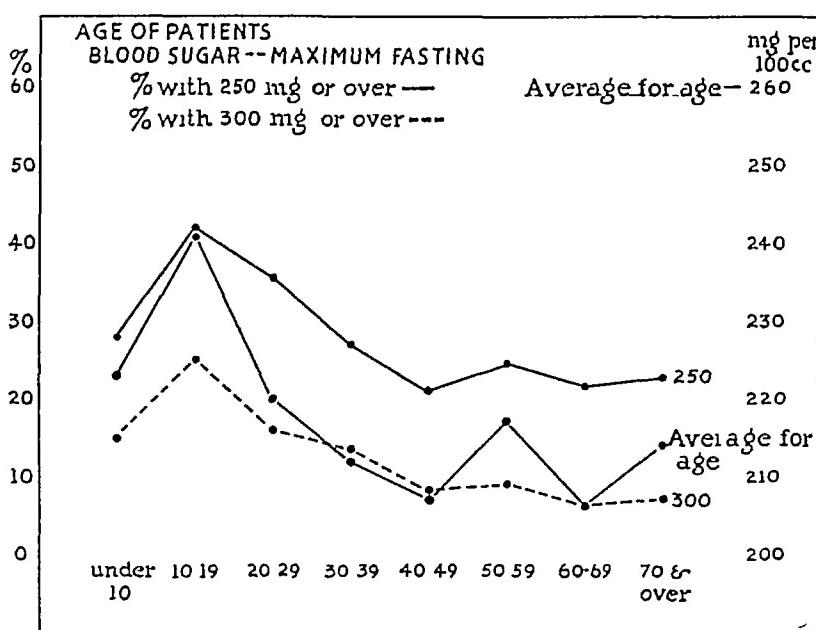


PLATE I.

specific findings was found to be the charting by age of the patients, and the charting by duration of diabetes. Gross incidence percentage for the entire group, diabetic or non-diabetic, may give a means for comparison with other series reported, but it fails to give a true and comprehensive picture of incidence for any complication. Charting the data by duration of use of insulin, and by graded severity of diabetes proved to be of less significance.

The 2459 cases in this series, 2002 diabetic and 457 non-diabetic, were taken as consecutive hospital admissions with no selection from an eye standpoint. Of the total cases, 297 were juveniles, under the age of twenty, and 2162 adults. The juveniles were all diabetics. For the study of purely diabetic ocular changes, unassociated with functional and organic changes which are bound to accompany increasing age, the juvenile group would seem to be the most promising. The adults, over the age of twenty, included

increasing age of the diabetic was attended not only by falling blood sugar levels, but also by reduced insulin dosage. Of the diabetics who could maintain satisfactory carbohydrate metabolism by diet alone without the use of insulin, there were included one per cent during the first decade of life, seventeen per cent during the fourth decade, and twenty-eight per cent during the eighth decade. The single exception to this general trend revealed by our graphs was found in the blood sugar peak of the five to ten year diabetics, plotted by duration of diabetes, Plate III. Insulin has been in use by the Joslin group since 1922, and without a doubt during the last ten years insulin has prolonged the lives of severe diabetics who would otherwise have succumbed. The peak of the curve above noted may be explained by the protective action of insulin, plus the slowly acquired self-education of the diabetic.

Forty per cent of our diabetics were males,

and sixty per cent females. Blood cholesterol determinations were made in 280 diabetics, and of these seventy-six patients had values in excess of 229 mg cholesterol per 100 cubic centimeters of blood. Hypertension systolic over 160 mm. Hg was present in 486, and diastolic

showed rates of plus ten or over. Diagnoses of tuberculosis were made in fifty four of the group, and of syphilis in thirty three of the group.

The non-diabetics, 457 patients in all, comprised a miscellaneous group from the medical

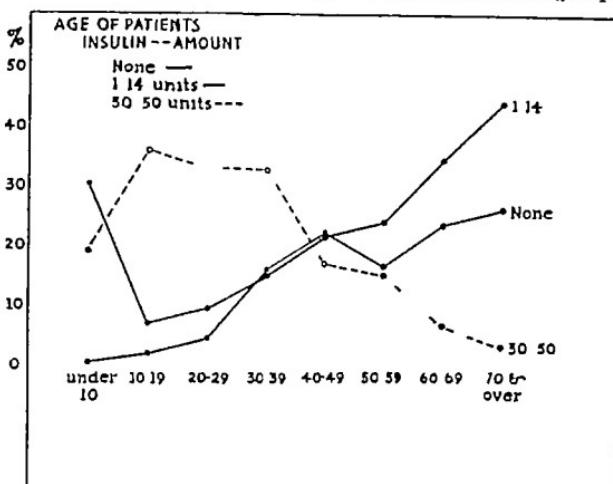


PLATE II

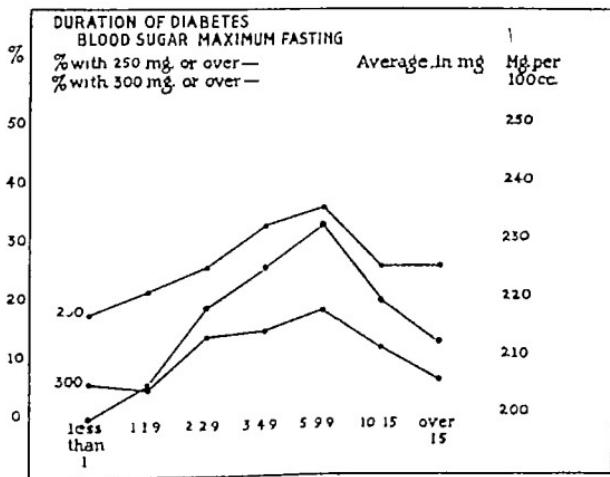


PLATE III

over 90 mm. Hg in 465 of the 2002 diabetic patients. Nonprotein nitrogen above 44 mg per 100 cc. was found in seventy-six of 1583 diabetics so tested (4.8 per cent). Basal metabolic rates were recorded in 189 diabetics, of whom fifteen showed rates of minus ten or less, ninety five showed rates within the normal range of minus ten to plus ten and seventy nine

wards of the Massachusetts General Hospital. Fifty-one per cent of these patients were males, and forty-nine per cent females. Non protein nitrogen above 44 mg per 100 cc. was found in twenty-seven (5.9%). Basal metabolic rates were recorded in seventy six non-diabetics, of whom twenty six showed rates of minus ten or less, thirty four rates within the

range of minus ten to plus ten, and sixteen rates of plus ten or over. Diagnoses of tuberculosis were made in thirty of this group, and of syphilis in twenty-nine of the group. Of the 457 non-diabetics here included, the chief diagnoses related to the following systems

Heart and Vessels	114
Hypertensive Heart Disease	25
Arteriosclerotic Heart Disease	51
Rheumatic Heart Disease	17
Disease Peripheral Vessels	21
Gastro-Intestinal Diseases	64
Blood Disorders	57
Bone and Joint Diseases	53
Respiratory Diseases	33
Neoplasms	32
Endocrine Disorders (not diabetic)	31
Renal Diseases	25
Diseases of the Central Nervous System	22
Liver Diseases	22
No Disease Found	4
	457

material, such as Wagener and Wilder<sup>8</sup>, Spalding and Curtis<sup>9</sup>, McKee<sup>10</sup>, Grafe<sup>11</sup>, Gray<sup>12</sup>, and Gresser<sup>13</sup>, is to account for the retinitis not in terms of diabetes alone, but in terms of hypertension, arteriosclerosis, and renal impairment which may accompany diabetes.

Horner<sup>14</sup> in 1873 first reported the transitory refractive changes of diabetes, changes which have been thoroughly reviewed with complete bibliography by Granstrom<sup>15</sup>. Granstrom concurs with Duke-Elder<sup>16</sup> in the belief that transitory refractive changes are due only in part to paresis of accommodation, but chiefly to altered curvature and altered index of refraction of the lens itself. Elschnig<sup>17</sup> cited the calculation of von Hess that the aqueous would need a twenty per cent sugar concentration to account for one diopter of refractive change, and he presented the interesting occurrence of transitory refractive changes in the normal eye of a diabetic with no such changes in the aphakic eye. Thorson<sup>18</sup> reported the onset of myopia in a hypertensive non-diabetic following the Sippy treatment for gastric ulcer, and, curiously, the finding of two small hemorrhages in the left retina. Schieck<sup>19</sup> called attention to the transitory myopia which may accompany severe diarrhea, and he cited observations of others who noted transitory myopia during iritis and during icterus. Himsworth<sup>20</sup> emphasized the frequent occurrence of transitory refractive changes in diabetes, and pointed out that it may be the initial symptom.

Heyl<sup>21</sup> in 1880 reported the first case of lipemia retinalis, and the forty-second case has been added to the literature in 1931 by McKee and Rabinowitch<sup>22</sup>. All of these cases have been associated with high blood fat, and all of the cases have been in diabetics except one which Wagener<sup>23</sup> reported in leukemia following radiation of the spleen.

Krause<sup>24</sup> in 1903 first described the ocular hypotonus which accompanies diabetic coma, a condition which is being encountered less frequently with the declining incidence and the prompt and efficient treatment of coma.

### III REVIEW OF IMPORTANT FINDINGS IN THIS SERIES

The following table shows the *principal ocular abnormalities* found in diabetics and in non-diabetics at the initial examination. In the entire paper, only the results of the initial examination are reported, unless otherwise stated in the text.

OCULAR ABNORMALITIES			
	4001 Eyes of Diabetics	914 Eyes of Non Diabetics	
Wrinkles posterior cornea	1040 26%	96 10.5%	
Weakness of accommodation	*165 21%		

### II HISTORY OF OCULAR CHANGES IN DIABETES

Changes in the eyes of diabetics have been recorded in the medical literature for nearly 150 years, the most commonly mentioned changes being those affecting the lens and the retina. In 1798, John Rollo<sup>2</sup>, originator of the meat diet in diabetic therapy and author of the first detailed monograph on diabetic eye complications, cited the association of diabetes and cataract. This association has been amplified in numerous clinical observations during the past hundred years, and it has been given prominent place in all textbooks of ophthalmology since 1840. The more searching and discriminating slit-lamp method of studying the abnormal lens has during the past decade cast grave doubts over the existence of a truly diabetic cataract, unless it be the bilateral and fine subcapsular dot-like opacities in juvenile diabetics, first reported by Schnyder<sup>3</sup> in 1923, and later by Goulden<sup>4</sup> in 1928. O'Brien, Molsberry and Allen<sup>5</sup> in 1934 reported bilateral diabetic cataract of two types, found by slit-lamp in twenty patients among 126 young diabetics, aged from two years to thirty-three years, representing an incidence of sixteen per cent. Andersen<sup>6</sup> in 1929, using mydriasis, found no higher incidence of cataract in diabetics than in non-diabetics.

Jaeger<sup>7</sup> in 1855, five years after the advent of Helmholtz' ophthalmoscope, described as diabetic retinitis the combination of fine deep retinal hemorrhages and confluent waxy exudates, found most commonly at the macula, but appearing elsewhere in the retina. The presence of similar retinal changes in non-diabetic patients with angiосclerosis and vascular hypertension has led the discriminating clinician to be cautious in speaking of a retinitis pathognomonic of diabetes. The trend among recent workers having access to extensive diabetic ma-

Deep retinal hemorrhages	†730	18%	‡34	3.7%
Waxy exudates in retina	†420	10%	‡7	.8%
Depigmentation iris epithelium	258	6%	21	2.0%
Transitory refractive changes	‡246	6%		
Cataracta complicata	‡216	6%	75	8.0%
Iritis	52	1.3%	12	1.3%
Atrophy of optic nerve	†27	6%	‡4	4%
Homonymous hemianopsia	22	5%		
Flocculus cataract—juvenile diabetics	22	.5%		
Glaucoma	31	.5%		
Argyll Robertson pupils	20	.5%	2	.2%
Paralysis extrinsic muscles	16	4%	1	.1%
Tobacco amblyopia	14	.3%		

Only 732 eyes had accommodation measured. (See section "Trile-Ciliary Body")

(Only 3193 fundi of diabetics visible. (Fundus not seen in 103 eyes because of opacities in media.)

(Only 961 fundi of non-diabetics visible. (Fundus not seen in 13 eyes because of opacities in media.)

\*Complicated cataracts in diabetics over 0 yrs.—3 under 0 yrs.—11

†Transitory refractive changes picked up by history only in majority of cases and incidence figure, therefore is not complete or accurate.

#### IV THE EYELIDS

The following eyelid abnormalities were found:

##### EYELID ABNORMALITIES

	4001 Eyes of Diabetics	914 Eyes of Non Diabetics
Squamous Blepharitis	143	3.7%
Xanthelasma	59	1.4%
Elongated Eyelashes	56	
Chalazion	12	
Hordeolum	7	4
Ectropion	3	
Herpes Zoster	3	
Epithelioma	2	
Psoriasis	2	

Compared with non-diabetics there were no unusual findings in the eyelids of diabetics, and xanthoma diabetorum was not found in a single instance. *Squamous blepharitis* in diabetics appeared 143 times or 3.7 per cent, while in non-diabetics it appeared four times or 0.6 per cent. *Xanthelasma* were found in fifty nine eyelids of thirty nine diabetic patients, an incidence of 1.4 per cent, as compared with an incidence of 0.8 per cent in non-diabetics. Of thirty nine diabetics with fifty nine xanthelasmas, the distribution was as follows:

Sex 34 women 5 men  
Age 26 patients over 50 yrs. 13 under 50

yrs.

Side Unilateral distribution in 19 patients  
Cholesterol In 16 patients, values over 2.9 mg per 100 cc. of blood were found in 7

Bilateral and conspicuously elongated eye lashes were found in twenty five juvenile diabet-

ics, twenty of whom were under the age of fifteen years, and in three adult diabetics (ages 22, 30, 40) Tamaoki<sup>10</sup> reports that long eyelashes have been observed in undernourished children with scrofulous diseases. One is impressed with the surprisingly low number of chalazia and hordeola in diabetics of this series.

#### V THE CONJUNCTIVA

The following conjunctival abnormalities were found

##### CONJUNCTIVAL ABNORMALITIES

	4001 Eyes of Diabetics	914 Eyes of Non Diabetics
Conjunctivitis	155	5
Ictarus	2	17
Hemorrhage	2	3
Edema	2	0
Trachoma	1	0
Dermoid	1	0

The cases of *conjunctivitis* in diabetics were practically all of the mild type and without complicating corneal ulceration. Bacteriological studies by smear and culture were made in forty diabetic eyes preliminary to surgery, cultures being made on Loeffler's blood serum slants, and transplants on blood agar plates. From forty conjunctivae so studied, eight yielded no organisms, and thirty two showed organisms of the following types and frequency

Staphylococcus albus	27
Staphylococcus aureus	8
Diphtheroids	5
B. subtilis	6
M. catarrhalis	1
M. tetragnus	1
Pneumococcus	1

#### VI THE CORNEA

The following corneal abnormalities were found

##### CORNEAL ABNORMALITIES

	4001 Eyes of Diabetics	914 Eyes of Non Diabetics
Arcus (see tables and and text)	387	39.8%*
Wrinkles	1040	26.0%†
Pigment Deposits	473	11.8%‡
Beaten-Silver"	180	4.5%§
Opacities	161	3.7%§
Vessels	52	1.3%§
Pterygium	15	.3%§
Pannus	14	.3%§
Unpigmented Keratitis Precipitates	7	.1%§
922 eyes.		
1457 eyes.		
11040 eyes:		
51 unilat. = 51 patients		
516 bilat. = 478 patients		
1040	682 patients	96 patients

\*11 eyes.  
†4 eyes.  
‡4 eyes.  
§4 eyes.

\*\*11 eyes.  
†4 eyes.  
‡4 eyes.  
§4 eyes.

\*\*11 eyes.  
†4 eyes.  
‡4 eyes.  
§4 eyes.

\*\*11 eyes.  
†4 eyes.  
‡4 eyes.  
§4 eyes.

## VI—1 Arcus

*Arcus* records were omitted during the first half of our survey. Subsequently, *arcus* was observed in thirty-nine per cent of 922 diabetics, and in thirty-nine per cent of 457 non-diabetics, Plate IV, with parallel increase of incidence.

Age Group	ARCUS					
	Diabetic			Non-Diabetic		
	Since 11/30/30	Ar- cus Pa- tients	%	Since 11/30/30	Ar- cus Pa- tients	%
Under 10	25	0	0			
10-19	114	0	0			
20-29	69	1	1.4	0	0	10
30-39	66	5	7.5	12.3	8	65
40-49	134	33	24.6	21.5	33	153
50-59	228	103	45.0	48.2	56	116
60-69	226	177	78.3	70.5	60	85
70 up	60	48	80.0	78.6	22	28
Total	922	367	39.8	39.1	179	457

## PLATE IV

through the various decades of each group to a maximum of eighty per cent in the eighth decade of life. Our summaries reveal no correlation between *arcus* and blood sugar, calcium, or phosphorus, or between *arcus* and the condition of the heart and blood vessels. One-third of forty-six diabetics with *arcus* in whom blood cholesterol was determined showed a cholesterol value above 229 mg per 100 cc, as shown in the accompanying table.

## 46 DIABETICS WITH ARCUS

16	had cholesterol from 100-199 mg
15	200-229
6	230-259
5	260-299
4	300-349

## VI—2 Wrinkles

*Wrinkles* involving Descemet's membrane were found in twenty-six per cent of the diabetics, and in 10.5 per cent of the non-diabetics. The wrinkles here described are invisible with the ophthalmoscope, and are seen only with the aid of the slit-lamp and corneal microscope. The larger wrinkles are seen in focal light, but the smaller ones are seen only with specular reflection and only after considerable diligence in the search. In our experience, acquaintance with the application and interpretation of mirror reflexes doubled the number of wrinkles found. The wrinkles are fine in character, vertical or oblique in direction, independent of sex, steadily increasing with age, bilateral in eighty-five per cent of the cases, central in location as a rule, variable in number but never sufficient to affect visual acuity in themselves. At no time do these wrinkles simulate

the heavier ones found in hypotonus or inflammatory states.

## CORNEAL WRINKLES (DESCMET'S)

Age Group	Diabetic		Non-Diabetic	
	Pa- tients	With Ex- am- ined	Pa- tients	With Pa- tients Ex- am- ined
1-10	65	0		
10-19	232	1	0.4	
20-29	142	2	1.4	
30-39	160	15	9.3	3.1
40-49	260	52	20.0	4.5
50-59	516	191	37.0	6.9
60-69	500	238	47.6	28.2
70 up	127	63	49.6	32.1
Total	2002	562		50 457

## PLATE V

In diabetics, wrinkles appear earlier, Plate V, they are progressively more frequent, and they are more numerous in the individual eye than in non-diabetics (numerous wrinkles in 44 per cent diabetics, and in 20 per cent non-diabetics). In diabetics, wrinkles were found in sixty per cent of the gangrene cases (47/78), in fifty-one per cent of the deep retinal hemorrhage cases (372/730), and in forty-three per cent of the diabetic neuritis cases (79/182). (The fractions used to express our findings are derived as follows—the numerator expresses the number of wrinkles found, the denominator expresses the number of cases alluded to.) If compared with the basic wrinkle incidence rate (26 per cent) these figures might seem significant, but etiologic importance is lost if correction be made for age.

## BLOOD SUGAR LEVELS AND WRINKLES

Maximum Fasting	Total Patients	Patients with Wrinkles	Incidence Wrinkles
Under 140	280	54	19%
140-249 mg	893	289	32%
250-400 mg	409	122	30%
Over 400	24	6	25%
Unrecorded Blood Sugar	396	91	23%
	2002	562	

## INSULIN AND WRINKLES

Units	Av Age for Group	Pa- tients	Patients with Wrinkles	Incidence
None	56	349	98	28%
1-14	54	502	187	37%
15-29	47	634	197	28%
30-49	37	375	68	18%
50 up	26	92	12	13%
	2002	562		

N P N AND WRINKLES (1584 N P N's RECORDED)				
N P N	Av Age for Group	Pa tients	Patients with Wrinkles	Incl dence
Under 35	—	878	239	27%
35-39	—	450	122	27%
40-44	—	180	75	41%
45 up	54	76	36	47%
		1584	482	

## INTRAOOCULAR PRESSURE AND WRINKLES

Schiotz Tension	Eyes	Eyes with Wrinkles	Incl dence
Unmeasured	653	156	156/653 23%
Under 13	12	4	
13-14	21	5	
15-16	95	23	126/522 24%
17-18	394	89	
19-22	2187	584	
23-25	483	117	701/625 26%
26-30	65	11	
31-40*	119	44	57/201 28%
Over 40*	17	2	
	4001	1040	

Clinical glaucoma in 1 eyes; wrinkles in 8-- 8%

A review of the four tables given above, attempting to correlate corneal wrinkles with blood sugar levels, insulin dosage, NPN, and ocular pressure levels fails to establish any clear cut relationship. One is tempted to think of the process as one of tissue dehydration accompanying age, but, of course, the genesis of wrinkles must await explanation on the basis of experimental data.

## VI-3 Pigment Deposits

Pigment deposits upon the posterior surface of the cornea were found in diabetics over twice as frequently (11.8 per cent) as in non-diabetics (5 per cent), a probable result of the facile release of pigment from the uveal tract of the diabetic. A more complete discussion in this connection will be made in the section devoted to iritis.

## VI-4 "Beaten Silver"

"Beaten-silver" appearance, an irregularity of the posterior surface of Descemet's membrane and considered to be a senile change, was found with the same frequency (4 per cent) in diabetics and non-diabetics.

CORNEAE OF DIABETICS		
Age of Diabetics	Beaten-Silver in Right Cornea	Beaten Silver in Left Cornea
0-20	0	0
20-29	1	1*
30-39	2	2
40-49	5	4
50-59	33	36
60-69	35	40
70 up	9	12
Total	85	95

Patient 28 years old.

In 180 eyes of diabetics, "beaten-silver" appearance was found chiefly after the age of fifty years, but in one patient as young as twenty-eight years. In fifty three of the 180 eyes, pigment deposits were found in association with the "beaten silver" appearance. Unless present to a marked degree, "beaten silver" appearance did not interfere with visual acuity. In six eyes of three patients included in the above tabulation there was marked reduction in acuity, imbibition of the corneal epithelium, and evidence of dystrophy arising from the senile change in the corneal endothelium and Descemet's membrane, as hypothesized by Vogt\*. Although we have observed small refractile bodies, resembling cholesterol crystals, in twenty-eight retinas and in the anterior cortex of 478 lenses of diabetics, we have never found similar bodies in the cornea of diabetics.

## VII THE IRIS AND CILIARY BODY

The following abnormalities were found in iris and ciliary body

IRIS AND CILIARY BODY ABNORMALITIES			
	4001 Eyes of Diabetics	914 Eyes of Non Diabetics	
Paresis of Accommodation*	165/759 21.0%		
Persistent Pupillary Membrane	377 9.4%	69 7.5%	
Depigmentation of Iris Pigment Epithelium	265 6.4%	21 2.0%	
Acquired Pigment Deposits on Anterior Lens Capsule	113 2.8%	17 1.8%	
Iritis-Cyclitis Active 11			
Quiet 38	5. 1.3%	12 1.3%	
Pupil Sluggish 55		26	
Dilates poorly 40		4	
Argyll Robert. 20	115 2.8%	33 3.5%	
Horner's Syndrome 1			

Accommodation measured in 759 eyes of patients under 60 years of age.

## VII-1 Paresis of Accommodation

Measured weakness of the accommodation was found in 165 of 759 eyes of diabetics, as

gauged by an arbitrary standard of accommodative power well below the accepted Donders-Duane normals. Patients over fifty years of age were not included, and, to be listed under paresis of accommodation, the eye had to be unable to attain the accommodative power listed below

Accommodation—12 diopters for 0 10 years of age	
9	11 20
7 5	21-25
6	26 30
4 5	31-35
3	36 40
2 25	41 45
1 50	46 50

PARESES OF ACCOMMODATION  
(Based upon standards above)

Age of Patient	Eyes Measured	Pareses Found	%
0 10	26	0	
10-19	207	16	7%
20-29	132	38	28%
30-39	151	46	30%
40-49	243	65	26%
	759	165	21%

It would seem that paresis of accommodation might be explainable in terms of deficient nerve impulse, reduced muscle tone, or altered character of the lens itself. In the entire series, we did not observe one case of ophthalmoplegia interna (midplegia or cycloplegia) such as one might expect if the accommodative weakness were wholly the result of neurogenic or myogenic causes. It is entirely possible that excessive glycogen deposition in the pigment epithelium of the ciliary body may hamper accommodation. On the other hand, the frequent association between transitory refractive change and accommodative weakness, such weakness being found in twenty-three of fifty-eight transitory refractive changes in diabetics under fifty (40 per cent), may suggest an altered lens state as a causative factor. Both of these conditions tend to disappear under a proper diabetic régime.

## VII—2 Depigmentation

Depigmentation of the epithelial layer of the iris was found three times as frequently in diabetics (6 per cent) as in non-diabetics (2 per cent). This proportion closely resembles the excess of pigment deposits upon the posterior surface of the cornea of diabetics (11.8 per cent) as compared with non-diabetics (5 per cent). In diabetic patients, there is frequently observed in slit-lamp study a fine radial pigment streaking on the anterior lens capsule, and in surgery a copious release of pigment to blacken the aqueous as the eye is opened. It is frequently possible to demonstrate by slit-lamp an unmistakable increase in visible pigment par-

ticles in the aqueous after massage of the diabetic eye. The 258 cases of iris depigmentation we describe were detected by transillumination, playing the slit-lamp beam upon the lens, and studying the iris in reflected light. It is difficult to explain why the uveal tract of the diabetic, particularly the elderly diabetic, releases its pigment so easily.

## VII—3 Glycogen

One possibility for the facile release of pigment from the uveal tract of the diabetic may be the alteration in iris pigment epithelium through selective glycogen storage in diabetics, demonstrated first in 1905 by Best<sup>7</sup>, and in 1914 by Hoffman<sup>28</sup>. It has been repeatedly demonstrated in our material at biopsy, but only through the use of fresh tissue, fixed at once in absolute alcohol, and stained with Best's carmine. Thus we have found abnormal glycogen deposits in the retina and optic nerve, in the epithelium of the lens capsule, and especially in the pigment epithelium of iris and ciliary body, which may show an increase of many times its normal thickness due to glycogen alone.

## VII—4 Iritis-Cyclitis

Iritis and cyclitis were found with the same frequency in non-diabetics and diabetics (13 per cent). From our studies, we have been unable to recognize a distinctive "diabetic" iritis or cyclitis, and we believe that the etiology, course and end results of iritis in diabetes differ in no conspicuous way from that in non-diabetics. In our series, we did not encounter one case of tubeosis diabetica iridis (Salus). We suspect that this condition is a sequel to hemorrhagic glaucoma which is not uncommon in diabetics, rather than being a sequel to diabetes itself.

## VII—5 Pupillary Abnormality

Pupillary abnormalities occurred in 28 per cent (115/4001) of the diabetic eyes, and in 35 per cent (32/914) of the non-diabetic eyes. For discussion, these abnormalities may be separated into two classes: first, pupils which showed normal reactions with pronounced difficulty in miosis, and secondly, pupils which showed abnormal reactions.

In forty diabetic eyes, and four non-diabetic eyes, there was marked failure of normally-reacting pupils to respond to any of the solutions of mydriatic drugs. The maximum dilation obtained varied from one-quarter to one-half of the normal magnitude, and the dilation was frequently irregular, asymmetric, and unequal. According to our observations, the order of decreasing mydriatic efficiency was as follows: two per cent euphthalmine hydrochloride with two per cent cocaine hydrochloride, one per cent atropine sulphate, one half per cent scopolamine hydrobromide, and two per

cent homatropine hydrobromide. Visible synechiae or other reasons for adequate explanation of poor mydriasis were lacking in all of these eyes.

In seventy five diabetic eyes, and twenty eight non-diabetic eyes, abnormal pupillary reactions were obtained. The majority of these eyes (fifty five diabetic, twenty six non-diabetic) showed sluggish reactions to all means of stimulation. Typical Argyll Robertson pupils, fixed to light, but reacting to accommodation convergence, were found in twenty diabetic eyes, and in two non-diabetic eyes. Analysis

### VIII. THE LENS

From this series we wish to report two types of lens abnormalities:

- 1 *Transitory refractive changes*: changes in the curvature and refractive index of the lens, accompanied by no visible clouding of the lens and in the patients of our series encountered chiefly by history of abrupt blur of vision.
- 2 *Lens opacities* of all sorts seen with the pupils at maximum mydriasis and with the aid of the corneal microscope and slit lamp.

### ARGYLL ROBERTSON PUPILS

Joslin Number	Age	Sex	Blood		Spinal Fluid			Diabetes		
			Blood Wassermann	Wass- er	Pro- tein	Cells	Gold Sol	Dura- tion in Yrs	Neu- ritis	Hyper- ten- sion
5423	53	F	3 neg					4	no	220/110
*9478	52	M	1 neg					2	no	
9473	57	M	1 neg					3	no	
*3505	63	M	1 pos (4 neg later)					10	no	168/110
*6220	64	F	3 neg					8	no	180/100
10892	48	M	1 neg	1 neg	60 mg	0	neg	16	yes	
10093	59	M	1 neg	1 neg	90 mg	286	neg	1	yes	
*10171	65	M	2 pos	1 neg	55 mg	0	neg	3	no	
10156	65	M	1 neg	1 neg	60 mg	2	neg	8	no	
*10759	63	M	1 neg	1 neg	65 mg	2	neg	3	yes	180/110

of the ten diabetic patients presenting Argyll Robertson pupils is shown in the table, five of the patients having had lumbar puncture and spinal fluid examination.

From the data in hand, one would strongly suspect lues in the five patients marked in the table by an asterisk in case 9478 by history of a primary lesion, in cases 3505 and 10171 by history of primary lesion by positive blood Wassermanns, and by supporting neurological findings, in case 6220 by one miscarriage and the loss during infancy of nine children out of ten births, and by supporting neurological findings, and in case 10759 by neurological findings. Data from the five remaining patients provide no means for incriminating lues, either in history or in clinical or laboratory findings. Three of these five patients had lumbar puncture and spinal fluid examination, with negative Wassermann in spinal fluid. The fluid in case 10093 was cloudy contained a total protein of 90 mg, and 286 cells per cubic millimeter probably a blood contamination. The fluid from cases 10892 and 10156 contained each 60 mg of total protein, but no other abnormal constituents. A protein of this magnitude, while abnormal does not indicate lues, but merely an altered permeability of capillaries.

### LENS ABNORMALITIES

	4001 Eyes of Diabetics	914 Eyes of Non Diabetics
Transitory refractive changes	246 6%	0
Total lenses with opacities* (one or more co-existing types)	1732† 50%	648 57%
Coronary opacities	512 13%	168 18%
Spokes in Anterior Cortex (post. 338)	728 21%	114 12%
Iridescent Crystals in Anterior Cortex	478 11%	97 10%
Fissures in Anterior Cortex (post. 199)	231 6%	39 6%
Complicated Cataracts	248 6%	75 8%

Total lens opacities does not mean a total of opacities but does mean a total of lenses with opacity without consideration to number or type of opacity in any one lens.

Since the 914 eyes of the non-diabetic group all represented patients over 6 years old, we have here listed total lens opacities in diabetics over 30 years old =

387 eyes  
1721 opacities.

### VIII.—A. Transitory Refractive Changes

Transitory refractive changes thrust themselves upon our attention by history of abrupt blur of vision in 123 diabetic patients. Fifty

eight of the diabetic patients named above were under fifty years of age, and in twenty-three of the fifty-eight (40 per cent) a measured weakness of accommodation was demonstrated. The average magnitude of transitory refractive change was under two diopters, and the maximum change demonstrated was eight diopters. According to our observations, transitory refractive changes were not present in aphakic eyes, they were always bilateral in lens-containing eyes but not always equal in magnitude, and they tended toward myopia in the untreated patient, and toward hyperopia in the treated patient. In our patients, the highest incidence was found in the fifth decade of life (10 per cent). Undoubtedly, the incidence of transitory refractive changes would have been materially increased if search had been made by consecutive cycloplegic examinations, because changes of small magnitude would be obscured by the latent accommodation in patients under forty years of age. Studied consecutively, Hinsworth<sup>20</sup> found transitory refractive changes in thirty-four per cent of 100 diabetics, and Granstrom<sup>15</sup> in treated diabetics found shifts toward hyperopia in fifty-seven out of eighty "fresh" cases, and seven out of thirty-eight "old" cases.

#### TRANSITORY REFRACTIVE CHANGES

Age Group	(Tabulated by Age)		%
	Patients Examined	Patients with TRC	
1-9	65	1	1%
10-19	232	13	5%
20-29	142	7	5%
30-39	160	10	6%
40-49	260	27	10%
50-59	516	44	8%
60-69	500	18	3%
70 up	127	3	2%
	2002	123	6%

Explanation of the transitory refractive change in diabetics is not to be found wholly in the sugar concentration of the ocular fluids, nor in the paresis of accommodation. Granstrom has shown that no change occurs in the corneal radius, and that no shortening or lengthening takes place in the axis of the globe, but that changes in the index of refraction of the lens nucleus does take place, changes which may be explained in terms of salt retention and osmotic interplay following precipitate blood sugar shifts.

#### VIII—B Lens Opacities

In the present unsatisfactory state of knowledge about the genesis of cataract, it would seem presumptuous to do more than report the number and types of lens opacities observable through dilated pupils with slit-lamp and corneal microscope. For this work, we used the Zeiss

instrument, and 40 diameter magnification obtained with 10x ocular and A-2 objective. In reporting the data obtained, we shall whenever possible cite totals in diabetics and non-diabetics of similar ages, and we shall follow a stated scheme:

- 1 General incidence of lens opacities of all types
- 2 Cortical changes
  - a Anterior cortex
  - b Posterior cortex
  - c Complicated cataract
  - d Flocculi in juvenile diabetics
- 3 Nuclear changes
  - a Embryonic and fetal nucleus
  - b Zonular cataract
  - c Adult nucleus
- 4 Miscellaneous changes
  - a Capsule
  - b Coronary opacities
  - c Aphakia

Cataracts removed in capsule from the eyes of diabetics and non-diabetics were analyzed for calcium, phosphorus, and cholesterol content by Dr Helen Updegraff Carey, who found a diminution of phosphorus in the cataractous lenses of diabetic patients, as compared with non-diabetic patients. This work is to be published<sup>21</sup> posthumously by Hazel M Hunt, Director of the Chemical Laboratories at the New England Deaconess Hospital.

#### VIII—B—1 General Incidence

The first summary of interest is the total number of lenses in each group showing visible opacities by slit-lamp, or the other side of the picture, the total number of lenses showing no opacities by slit-lamp. Counting all types of lens opacities (fissures, spokes, wedges, equatorial opacities, lamellar dissociation, complicated cataracts, dots, vacuoles, and iridescent crystals) in diabetic patients over twenty years of age, there were 1732 lenses with one or more such opacities among 3407 eyes, an incidence of fifty per cent. The count in non-diabetics over twenty years of age was 526 lenses with one or more such opacities among 914 eyes, an incidence of fifty-seven per cent. If both groups be analyzed according to decades of age, and be graphed according to the total number of clear anterior capsules and clear anterior cortices, we have the negative information as shown in Plate VI. Diabetics through all age levels after thirty showed a greater number of clear capsules and cortices than did non-diabetics.

#### VIII—B—2 Cortical Changes

a *Anterior Cortex* The type and number of opacities found in the anterior cortex in diabetics and non-diabetics are shown in the table

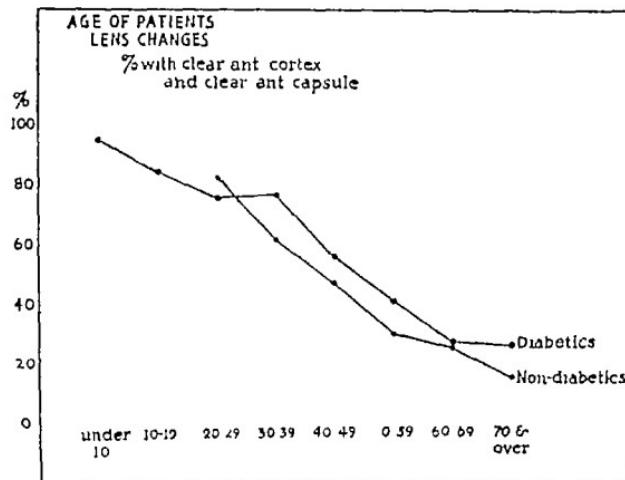


PLATE VI.

## OPACITIES IN ANTERIOR CORTEX

	4001 Eyes of Diabetics	914 Eyes of Non- Diabetics
--	------------------------------	----------------------------------

Spokes and wedges

728

114

Fissures

231

39

Lamellar dissociation

130

60

Equatorial opacities

194

49

Vacuoles

175

28

Dots

806

870

Iridescent crystals

478

97

SPOKES IN ANTERIOR CORTEX,  
DIABETICS AND NON DIABETICS

## DISTRIBUTION BY AGE

	Diabetics	Non-Diabetics				
Eyes	Spokes	%	Age	% Spokes	Eyes	Exam.
Exam.						
Under 10	130	0				
10-20	464	0				
20-30	284	7	2%			
30-40	319	7	3%			
40-50	520	39	7%			
50-60	1032	220	21%			
60-70	999	345	34%			
70 up	253	110	43%			
	4001	738				
					114	914

X. Spokes in the anterior cortex may be studied with respect to distribution by age in both diabetics and non-diabetics, Plate VII, and those in diabetics with respect to duration of diabetes and amount of insulin.

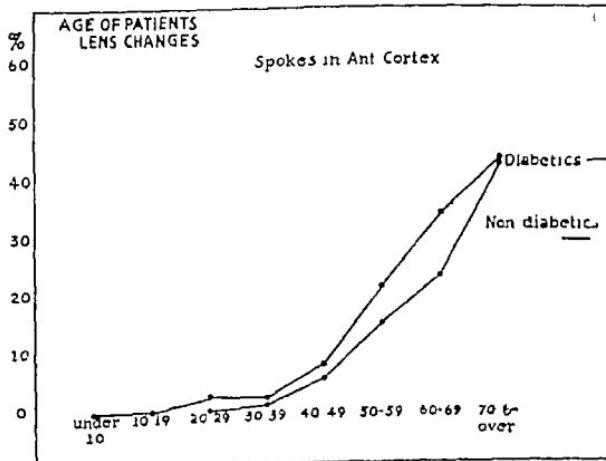


PLATE VII.

An analysis of this sort would seem to indicate that spokes are but a coefficient of age, running nearly parallel through both groups, but a little more frequent in diabetics during the fifth and sixth decades than in the non-diabetics. Spokes in the *anterior cortex of diabetics* may be studied by the duration of diabetes, and by the amount of insulin given.

#### SPOKES IN DIABETICS—DURATION OF DIABETES

Duration Diabetes	Av Age Each Duration Group	Eyes Exam	Spokes Ant Cort	%
Less 1 yr	40 1	1001	119	11%
1-9 yr	45 1	452	76	16%
2-9 yr	45 1	378	40	10%
3-9 yr	45 1	560	85	15%
5-9 yr	41 2	966	203	21%
10-15 yr	55 2	419	116	27%
Over 15	61 8	225	89	39%
		4001	728	

#### SPOKES IN DIABETICS—AMOUNT OF INSULIN

Amt. Units Insulin	Av Age Each Group	Eyes Exam	Spokes Ant. Cort	%
None	56	697	138	19%
1-14	54	1004	248	24%
15-29	47	1366	234	17%
30-50	37	750	93	12%
50 up	26	184	15	8%
		4001	728	

If correction be made for an age factor, increasing with duration of diabetes, and decreasing with the larger doses of insulin, there would

seem to be no striking relationship between spokes and the duration of diabetes or the amount of insulin administered. Neither is there any relationship of importance between spokes in the anterior cortex and abnormal blood constituents in diabetics. Of seventy-five diabetics with blood cholesterol above 229 mg per 100 cc., spokes were found in fifteen (20%), and of 274 diabetics with fasting blood sugars above 300 mg per 100 cc., spokes were found in forty-one (15%).

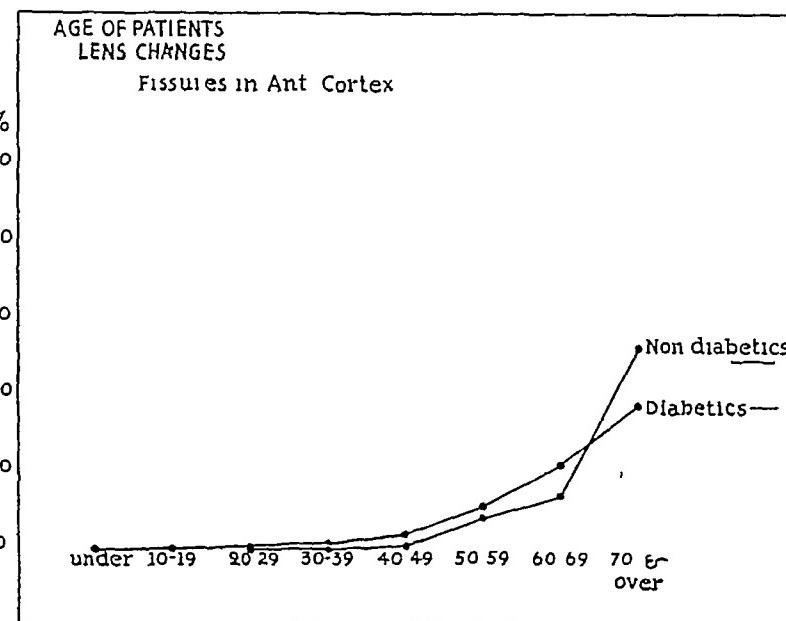
*Fissures in the anterior cortex* may be studied with respect to distribution by age in both groups, Plate VIII, and in diabetics with respect to distribution by duration of diabetes and by amount of insulin.

#### FISSURES IN ANTERIOR CORTEX—DIABETICS AND NON DIABETICS (DISTRIBUTION BY AGE)

Diabetics			Non-Diabetics		
Eyes Exam	Fis-sures	%	Age	%	Eyes Exam
130	0	Under 10			
464	0	10-20			
284	0	20-30			
319	2	30-40			
520	12	2%	40-50	0.7%	2 306
1032	58	5%	50-60	4%	10 232
999	111	11%	60-70	7%	12 170
253	48	19%	70 up	26%	15 56
4001	231				39 914

Fissures are not so frequent in each group as are the spokes, but they seem to follow age in trend.

*Fissures in the anterior cortex of diabetics*



## FISSURES IN DIABETICS—DURATION OF DIABETES

Duration Diabetes	Av Age Each Duration Group	Eyes Exam.	Fissures Ant. Cort.	%
Less 1 yr	40.1	1001	39	2%
11.9 yr	45.1	452	14	3%
2.9 yr	45.1	378	10	2%
3-4.9 yr	45.1	560	27	4%
6-9.9 yr	41.2	968	47	5%
10-15 yr	55.2	419	41	9%
Over 15	61.8	225	53	23%
		4001	231	

## FISSURES IN DIABETICS—AMOUNT OF INSULIN

Amt. Units Insulin	Av Age Each Group	Eyes Exam.	Fissures Ant. Cort.	%
None	56	697	53	7%
1-14	54	1004	75	7%
15-29	47	1366	73	5%
30-50	37	750	26	3%
50 up	26	184	4	2%
		4001	231	

The same remarks apply here that were given for spokes. Of 75 diabetics with blood cholesterol above 229 mg per 100 cc., fissures were

found in three (4%), and of 274 diabetics with fasting blood sugar above 300 mg per 100 cc., fissures were found in eight (2%).

b *Posterior cortex*. The type and number of opacities found in the posterior cortex of diabetics and non-diabetics are shown in the table

	4001 Eyes of Diabetics	314 Eyes of Non-Diabetics
Spokes and Wedges	378	40
Fissures	199	23
Lamellar dissociation	19	18
Vacuoles	362	38
Dots	278	50
Iridescent crystals	316	39
Cataracta complicata	246 6%	75 8%

Thus, the posterior cortex apparently contains relatively less spokes, fissures, lamellar dissociation, and relatively more vacuoles than does the anterior cortex. Distribution of opacities in the posterior cortex analyzed by age, by duration of diabetes, and by amount of insulin given differs in no essential way from the distribution shown in the anterior cortex.

All references will appear at the end of this paper, the second part of which is scheduled for next week's issue.

## PULMONARY TUBERCULOSIS AND PREGNANCY

BY CLEVELAND FLOYD, M.D.\*

## EFFECT OF PREGNANCY ON TUBERCULOSIS

THERE has been great difference of opinion as to the effect of pregnancy upon pulmonary tuberculosis. Up to eighty years ago pregnancy so far from being regarded as a complication of tuberculosis was considered to be rather beneficial (We recall the advice of Hippocrates that consumptive girls should marry.) It was Grisolle who, in the middle of the last century first insisted on the unfavorable effects of pregnancy on pulmonary tuberculosis. Whereas the bad effects of delivery and the puerperium had been remarked, the deleterious influence of pregnancy itself was more difficult to establish, as it was masked behind a seeming improvement or arrest of the tuberculous process frequently noticed after the first months of pregnancy, and which we are now inclined to attribute to a sort of partial bilateral pulmonary compression induced by the characteristic raising of the dia phragm, coincident with the advance of gesta tion.

It was gradually recognized that the whole course of a tuberculous process and the whole course of a pregnancy could not be regarded as

units in evaluating the effect of pregnancy on tuberculosis of the lungs. The advancing periods of the pregnancy complicate to a varying extent the different stages of the pulmonary tuberculosis. It was also realized that old, healed or dormant lesions were not of much importance in this connection. Hence it was desirable to differentiate. This was extensively undertaken, with the result that, according to the figures of one authority (Frischbier) pregnancy induces an aggravation in the tuberculous condition in 70 per cent of the cases, but according to another (Scherer) in only 64 per cent. Such a great variation in results can only be explained on the assumption that the different investigators are not dealing with the same material, or are not handling it in the same way.

It is of the utmost importance to consider the fundamental situation underlying the available data. Whether one agrees that about 5 per cent of all cases of pregnancy are complicated by tuberculosis of the lungs, and that of these about one fifth, or only 1 per cent are active, it will probably be conceded that the figures gathered from the actual experience of any one man are not in themselves conclusive. The remedy for this situation is to take into consideration the figures of various research workers, institutions

and practitioners. Here, however, an as yet unsurmounted obstacle is encountered. There are several variables in the equation, which are now generally recognized, chief among which are the type of the infection, the stage of its progress, and the stage of the pregnancy. There has been an attempt to make allowance for these. There is a much larger number, however, rectification for which is generally not even attempted, such as the constitutional, social, economic, and mental factors conditioning the individual patient. Not only this, but the method of dealing with the figures differs so that they involve a heterogeneity even when submitted to a single man for ultimate analysis.

To illustrate. It is fair to assume that pulmonary tuberculosis will be uniformly differentiated from that specifically affecting other parts of the body, but two general types are usually distinguished in the pulmonary form, which are variously designated as progressive and stationary, active and inactive, open and closed, exudative and proliferated, manifest and latent, acute and chronic, and either of these may be unilateral or bilateral. These designations give no basis for an exact comparison. It is obvious, for instance, that a case classified as "stationary" by one reporter might quite well be in the "active" category of another, etc., and yet for each, respectively, it is the second, or more serious, type which alone is usually involved in discussions of the effect of pregnancy upon tuberculosis of the lungs.

Frequently in the literature the patients are reported to be in the "first" or "second" stage of pulmonary tuberculosis, without any indication being given as to how these stages are determined. Usually, however, the three stages as outlined by Tuiban and modified by Gerhardt are referred to:

I Stage—Slight involvement, limited to small area of one lobe, which in bilateral cases may extend from the apex not lower than the spine of the scapula, and the clavicle, in unilateral cases, from the apex not below the second rib in front.

II Stage—Slight involvement, more extensive than I, but at most implicating half a lobe.

III Stage—All involvements more extensive than I and II, and all with any considerable cavities.

This division is based primarily upon the extent of the involvement, and leaves out of consideration the dynamic virulence of the infection. Other divisions, such as those of Bard-Piercy-Neumann have also been used, but no schematic arrangement can fairly reflect the myriad phases and combinations in the progress of pulmonary tuberculosis.

The pregnancy itself may be divided merely into the "first" or "second" half. If a finer division is made, it is apt to be fanily uniformly into three stages, the first comprising the period from conception to sixteen weeks, the second, from the sixteenth to the twenty-eighth week of gestation, and the third, from the twenty-eighth week on, when the fetus is presumed to be viable. This seems clear and logical enough, but translated into terms of months, confusion arises from the fact that many writers tacitly imply a ten-lunar-month duration of pregnancy, whereas others speak in the tradition of nine months. A further objective source of inconsistency lies in the varying lengths of time after parturition during which aggravation of pulmonary tuberculosis is regarded as attributable to the child-bearing. Some authorities report negative effects if no signs appear within two weeks, whereas others include in their figures the results of medical observation extending for as much as fifteen years!

Aside from these variables, for which rectification has been attempted, however inconsistent with each other, there remain the variables which are rarely if ever given scientific consideration, and to which only brief allusion can be made here. It was Libermeister who said that the effect of pregnancy on pulmonary tuberculosis depends essentially upon the capacity of the sick organism. A tuberculous woman in a sound social and economic situation, eager to have the child, and able to be closely tended and cared for, will bear pregnancy better than one with the same clinical findings, but burdened with economic worry regarding the expense of this addition to the family, and who, so far from being able to indulge in increased rest, must perhaps work longer hours to meet this new item in the budget. For such a woman, who has just barely held her own, pregnancy may be the last straw. Then, too, a much neglected issue is that of individual type. Those with long, thin, relatively undeveloped torso seem to be those predisposed to tuberculosis, and those with whom its evolution is rapid. The stocky, thick-set type resists it better. It is quite possible that considerations of age, race, occupation and climate should also be taken into account.

If such are the obvious inconsistencies in the choice of the case material itself, no less important are the vagaries of the different analyzers in their interpretation thereof. Thus one worker, when asked for a report on the unfavorable effects of pregnancy on the course of pulmonary tuberculosis observed in the institution with which he was connected, rejected as evidence all the cases which were first examined in advanced pregnancy, for despite the fact that the inroads of the tuberculosis were great, it was impossible to establish—clinically—that the lung condition had been aggravated by the

pregnancy. Another worker, faced with a similar situation, might accept the impression of the patient as to whether the inception of the tuberculous process or its aggravation occurred in connection with the pregnancy. One might go on multiplying such instances of irreconcilability, but enough has been said to indicate that what with the diverse classifications of the disease, and of its stages, the various divisions of the period of pregnancy, the unrecognized factors of social and economic import, taken in conjunction with the divergent points of view of those who interpret the figures the number of varying combinations possible in any apparently well-organized group of statistics would run into the thousands.

Yet even the statisticians seem to agree in general upon an aggravating influence of pregnancy on pulmonary tuberculosis. This is but natural, for the modern therapy for tuberculosis, as to both men and women, involves rest freedom from overexertion pain or anxiety. The aim is to produce a margin of strength by which the healing process may be furthered. All extraordinary burdens of whatever sort are definitely contraindicated, and any concomitant disease is a cause for apprehension. In this connection it is not without interest to review some of the physiological changes incident to normal pregnancy, which in any other circumstances would be considered pathological. Pregnancy makes excessive demands of calcium, iron and iodine metabolism. There is a pronounced hypertrophy of the parathyroids reflecting the drain for calcium. A pregnant woman's basal metabolic rate during the later months is 30 per cent higher than that of a non pregnant woman. There is a tendency to glycogen deficiency in the liver which is most marked in early weeks of pregnancy. The renal threshold for sugar is lowered, with a resulting glycosuria. The capacity of the kidney declines progressively during the last twelve weeks of pregnancy with the result that every woman definitely drops toward the toxicemic level of urine volume during the latter part of gestation. As to the blood, there is a diminution of red corpuscles and an augmentation of fibrin and of water, with about normal albumin. Thus there results a marked relative preponderance of albumin over red corpuscles. An encroachment on the cardiac reserve is always demonstrable in healthy pregnancy. The entire circulation is upset, the pulse is quickened, the blood pressure is raised. The physical changes induced by pregnancy are calculated not only to stimulate metabolic activity, tax glandular functions and burden the eliminative mechanism, but to increase the rate of respiration, which is especially significant in connection with pulmonary tuberculosis, where rest for the diseased lung is of prime importance.

Any consideration of the effects of pregnancy

upon a tuberculous woman must also take into account its climax and end results. Uninterrupted pregnancy leads to parturition, which involves severe demands on the human organism. The term "labor" is not without significance. In addition to the normal exertion involved in delivery, there is always the possibility of emergencies more serious for the tuberculous woman than for the average mother, such as infection, or the resort to anesthesia. One physiological factor in parturition which is specifically injurious to the diseased lung is the sudden decompression consequent upon the descent of the diaphragm at delivery. Not only must the complications of pregnancy and parturition be taken into consideration, but those presented by the life of the infant as well. Of course the mother should not nurse her child, but aside from this the necessary ministrations are many and insistent, involving broken sleep lack of rest, and nervous exhaustion. If the home conditions are not such that these burdens can be spared the tuberculous mother, there is no doubt but that they must be added to the undesirable effects of childbearing upon pulmonary tuberculosis.

#### TREATMENT OF A TUBERCULOUS WOMAN DURING PREGNANCY

In dealing with a pregnant woman suffering from pulmonary tuberculosis, two courses are open to the physician. He may address himself primarily to the treatment of the lung condition, modifying the usual therapeutic measures only in so far as the changing physical condition of the woman requires, or he may resort to prophylactic measures aiming to protect the phthisic patient from the ordeal of parturition and the dangers of the puerperium. The first course suggests either the traditional sanatorium care, or the induction of artificial pneumothorax, the second involves abortion.

Individual variations in resistance, the extent of the pulmonary area involved, the severity of the infection, as well as the influence exerted by age, sex and race are elements in the determination of the course of the disease, to which pregnancy adds one more factor, due to its tendency to modify the behavior of the lung lesion. All these considerations must be weighed in making a choice of procedure.

Pulmonary tuberculosis can be most effectively treated in a sanatorium. The benefits accruing from an established routine of bodily rest, freedom from domestic responsibilities, and a diet relevant to the disease are in themselves notable, and may enable a woman successfully to withstand the aggravation of the tuberculous condition so frequently a concomitant of pregnancy. However whereas sanatorium care is even more urgently indicated for the pregnant consumptive than for the ordinary phthisic, to

produce satisfactory results, it should cover the whole duration of the gestation, parturition, and puerperium, and a period of at least six months thereafter. This last is of the utmost importance, because it is the time recognized as fraught with the greatest danger of the breaking down of a healed process or the quickening of an active lesion. If the tuberculous condition is induced by the pregnancy, the sanatorium treatment cannot of course be begun until its confirmation, but the activation of pulmonary tuberculosis by pregnancy is rarely delayed many weeks, and progress has been made in its early diagnosis.

If, for whatever reason, sanatorium care is ineffective to check the progress of the disease with the advance of pregnancy, or if its benefits are not available because of the economic situation, other means of aid must be resorted to.

#### PNEUMOTHORAX

Artificial pneumothorax results in functional lung inactivity, by the creation of a positive intrapleural pressure which reacts directly against the normal inflation of the lung during respiration, and impedes the movement of the thoracic muscles. The effectiveness of this method in controlling pulmonary tuberculosis is well established. When a complete collapse of the diseased lung is possible, suppression of the symptoms of active disease, such as fever, cough, and expectoration, may be counted on. Even in cases where the tuberculous process has advanced to the stage of cavity formation, pneumothorax will often give striking results. The cavities may be closed, and, as a consequence, positive sputum may be eliminated, and this constant source of danger be done away with. Collapse therapy is one of the most effective in dealing with pulmonary bleeding. The acute extension of the tuberculous process as a result of aspirated blood with ensuing tuberculous pneumonia, is thereby prevented. To insure satisfactory results, the compression of the lung, maintained by periodic refills, should be continued for from two to five years, as it is impossible to renew the treatment by collapsing a lung that has once been permitted to reinflate.

The enduring effect of pneumothorax is such that in those instances where phthisis has been apparently healed by this means before the inception of pregnancy, the latter runs a normal course without deleterious reaction on the lungs. It is wise, however, to insist upon an interval of two years between the healing and subsequent pregnancy.

Resort to pneumothorax in conjunction with pregnancy is fraught with no greater likelihood of complications than where pulmonary tuberculosis alone is the issue. Where pneumothorax has once been successfully established,

it should not be discontinued on account of an intervening pregnancy and puerperium. Certain precautions should be observed, however. The raising of the diaphragm in pregnancy brings about a dislocation of the lungs. There is a reduction of the vertical diameter of the thoracic cavity, with a corresponding increase in the transverse diameter. Normally, the diminished action of the diaphragm, which this implies, is compensated for by enhanced activity of the muscles of the thorax. In pregnant women under pneumothorax, this is increased, for one lung is almost wholly immobilized by collapse. Hence, unless there be a reduction, or even a temporary cessation of refills, during the last months of pregnancy, regulated according to the condition of the patient and to the degree of her shortness of breath, an enormous surcharge of work is put upon the well, breathing lung, already embarrassed by the raising of the diaphragm, which favors making acute any inactive or initial processes. Disturbances of the circulation may also be provoked, because of the fact that the mediastinum, and with it the very important organs it contains, are subjected to a triple pressure from the bottom up by the increased endo-abdominal pressure, from one side by the pressure exerted by the pneumothorax, and from the other side by the breathing lung which is in a state of compensatory emphysema. Hence the routine technic in producing pulmonary compression in connection with pregnancy requires mature judgment on the part of the operator that he may correctly gauge the progress of the disease, the proper interval between refills and the amount of intrathoracic pressure necessary to be maintained without causing embarrassment to the abdominal organs and the already burdened heart.

The effectiveness of this procedure depends in large part upon the duration of its application prior to the inception of pregnancy. If the collapse has not yet reached its maximum therapeutic value, whether by being begun too recently, or by reason of pleural adhesions preventing complete collapse, or by other complications, the woman is not adequately defended against the strain of pregnancy, and feels its consequences in her weakest spot, the lung. In such cases, pneumothorax may be inadequate to impede the advance of the lesions. These considerations hold with equal or greater force when the pneumothorax is instituted after the beginning of the pregnancy, or after parturition, yet even in these cases, remarkably satisfactory results may be obtained.

Simultaneous bilateral pneumothorax in pregnant women is of such difficulty and clinical delicacy that it is not to be advised except in special cases. Nevertheless, where the bilateral treatment, previously instituted, has had to be

abandoned after a relatively short period, the tuberculous process may have been sufficiently checked to have benefited the patient. In the treatment of a bilateral process under these circumstances, phrenicotomy, or, for temporary effect, nerve crushing in place of excision, may be resorted to in conjunction with pneumothorax. One lung is thus subjected to limited activity and increased intrapleural pressure by dia phragmatic paralysis while the second can be simultaneously treated with pneumothorax. The more radical procedure of thoracoplasty will rarely if ever be employed in the case of a pregnant woman. Where it is otherwise desirable, it may prove of great value if deferred until after parturition.

#### ABORTION\*

With the opening of the twentieth century the dangers of pregnancy, parturition and the puerperium for a woman suffering from tuberculosis of the lungs were so firmly established that it was generally recognized that abortion should be considered as a prophylactic measure. A decade later, this practice had become the rule, and hundreds of articles appeared particularly from the pens of methodically minded German authorities, advocating early abortion in every case of the concurrence of pregnancy with pulmonary tuberculosis, as a matter of principle, irrespective of the clinical prognosis of the individual case. This position was assailed not only by those who discountenanced abortion on religious or political grounds, but by physicians who questioned the necessity or efficacy of the procedure. Each side resorted to statistics to support its contention but met with familiar difficulties. The quantitative basis of the schemes in use for the general analysis of the course of pulmonary tuberculosis rendered them peculiarly ill adapted to serve as indices for resort to abortion, where the rate of degeneration is the crux of the issue.

Another serious source of error in connection with figures showing the effects of abortion on the course of pulmonary tuberculosis was that the term was sometimes restricted to technical abortion, sometimes used to cover inadvertence of miscarriage and of premature delivery as well. Moreover, among its effects are frequently included those consequent upon sterilization by a major surgical operation which is a far cry from a simple manipulation under a local anesthetic.

No hard and fast rule can be laid down, a priori, as to when one should and when one should not resort to abortion nor can the exact limits of an unfavorable prognosis in the ab-

sence of abortion be established. Certain indications may be suggested, however, based upon a thorough knowledge of the social and medical background of the patient as well as the state and course of the disease.

In the case of a healed lesion, or of an obsolete process, where the x ray shows fibrosis or calcification, sanatorium methods of care followed in the home are all that are required to carry the patient successfully through gestation and parturition. In the latent case, where there is a history of exposure to phthisis, a few positive symptoms, no signs of physical activity and uncertain or early x ray changes, there is no need to consider interrupting the pregnancy, if the patient can be cared for in a sanatorium, with or without artificial pneumothorax.

In the early active case of pulmonary tuberculosis, where cough, fever, moist rales and x ray shadows, soft and flocculent in aspect, are present, pregnancy may be allowed to continue to term, provided sanatorium methods of treatment are adopted, together with the induction of pneumothorax, either at the time of the discovery of the disease, or later on in the pregnancy, if the process of infiltration advances, even deferring it until after confinement, if all the pulmonary indications are favorable.

Where pregnancy occurs in a unilateral case, already well established, as shown by signs of infiltration and moist rales involving the upper third of the chest, and accompanied by cough, expectoration, loss of weight, and positive sputum, pneumothorax should be instituted at once, if the pregnancy is to be allowed to proceed without interruption. If for whatever reason, pneumothorax is impossible abortion should be resorted to. This should be done as soon as possible, even if from the point of view of the clinician and the roentgenologist, the tuberculous process appears in a favorable light, because in the later months of pregnancy the tuberculous deterioration is greatly accelerated, whereas the earlier the abortion is done, the greater is the assurance of success.

In those cases, however, where the disease when first detected is already in an advanced stage, and the prognosis for the mother is bad, interruption of the pregnancy would contribute little toward saving the life of the mother, and that of the child would be sacrificed. It is better, therefore, in the advanced case to allow pregnancy to proceed without interruption.

Acute miliary tuberculosis in the majority of cases leads rapidly to a fatal termination. Occasionally in a patient of relatively high resistance, the chronic form of this condition is encountered, but these cases are unusual. In neither of these situations is anything to be gained by the use of pneumothorax or by the interruption of the pregnancy.

\*For the purposes of this paper the term "abortion" is to be understood to cover all interruption of pregnancy up to the seventh month, at which time the fetus is presumed to be viable. In the legal vernacular the term "miscarriage" seems to be preferred, but whatever the word, the idea in view is interference which renders impossible the issue of a living child.

Tuberculous enteritis, as well as tuberculous ulceration of the larynx, is commonly associated with advanced pulmonary tuberculosis, and in the great majority of cases, the prognosis is unfavorable. Where pregnancy is complicated with these manifestations of advanced disease, the duty of the physician is primarily to the child. Rarely, if ever, will interruption of the pregnancy be seriously considered in such cases.

The stage of gestation at which the interruption is undertaken is of great import to the patient. The termination of pregnancy in its early weeks is a much more simple matter than later on. Following the completion of the first sixteen weeks, on account of the development of the fetus, the increasing size of the placenta and uterus, abortion must be regarded as a major operation for the tuberculous.

The methods of producing abortion vary from the simple use of x-ray to the serious operation of hysterectomy. The experience of numerous men with the use of x-ray in the production of abortion merits careful consideration. The chief advantages of this method are its simplicity of application, its comparative innocuousness to the patient, and the fact that the resulting abortion occurs spontaneously and without uterine hemorrhage. If desired, the x-ray exposure may be so regulated that menstruation is not interfered with. Although the expulsion of the fetus may not take place for over a month after radiation, there seems to be no evidence of infection as a result of this delay.

There has been discussion in recent German literature in regard to the use of intra-uterine applications. Several pastes have been employed and have had an extensive vogue. They induce expulsion of the fetus within twenty-four hours. Occasionally the placenta requires mechanical removal. This method of inducing abortion has not received general acceptance, however.

Another procedure is that of spraying or injecting a strong solution of sodium and calcium chloride between the membranes and the uterine wall. In twenty-four hours, due to the irritating effect of the solution, abortion takes place without mechanical aid. The method is not always successful and occasionally the placenta does not come away without instrumental removal.

In surgical interruption of pregnancy, two factors are of great importance—the type of anesthesia and the simplicity of the method adopted for emptying the uterus. It is essential to avoid the likelihood of sepsis, and yet to place as slight a tax as possible upon the already burdened organism. At any time during the first sixteen weeks of pregnancy, dilatation of the cervix and curettage of the uterus under spinal anesthesia has proved a simple and rapid method of performing abortion.

From the fourth to the seventh month of

gestation, termination of pregnancy may be readily brought about by packing the cervical canal with gauze, after sufficient mechanical dilatation. Within twenty-four hours the fetus and placenta are expelled or can be easily removed. The likelihood of sepsis or hemorrhage is small.

When the complication of carcinoma of the uterus or the presence of a large fibroid is added to that of tuberculosis during pregnancy, hysterectomy will be required to care for these contingencies, and will at the same time encompass the necessary abortion. Unless some such condition arises in the pregnant woman requiring the removal of the uterus, this procedure should be avoided as too drastic.

The effect of abortion in a case of pulmonary tuberculosis depends largely upon the method adopted and the time in the pregnancy at which it is undertaken. In some cases the specific reaction of the patient to the operation is slight, but at other times in spite of the rapidity and skill with which it is accomplished, there may be very definite repercussions which endure for weeks, such as an unstable nervous system, accelerated heart action, secondary anemia, and a general lowering of the patient's vitality, with a resulting increase in the extent of the pulmonary lesion. In the great majority of cases, however, where abortion is relied upon to contribute in checking the progress of a tuberculous process which cannot be controlled by pneumothorax, the patient is spared the tax upon her circulation, the rapid descent of the diaphragm following labor, the exhaustion and loss of blood accompanying parturition, as well as the responsibilities of caring for the infant.

#### STERILIZATION

In view of the increased sexual activity common among the tuberculous, and the resulting likelihood of pregnancies, the question of sterilization frequently arises. The physician has only partly performed his duty to his patient by interrupting a single pregnancy, as the possibility of invalidism or even death from tuberculosis may be a recurrent issue with each succeeding confinement. Sterilization is the only trustworthy method of controlling this situation. If this course is determined upon, the time at which it should be undertaken will be decided upon both medical and practical considerations. Ordinarily a tuberculous patient is in such a condition when abortion is resorted to that her state of health makes it advisable to proceed to sterilization at one and the same time. From the strictly medical point of view, therefore, it is usually better to wait until the patient has recovered from the effect of the emptying of the uterus, and the tuberculous process has been brought under control. As a practical matter, however, in view of the

likelihood of renewed conceptions, unless the patient be under surveillance in an institution, it is frequently desirable to proceed at once to sterilization.

With the progress that is being made in sterilization by x ray, it is to be hoped that this will present a dependable method within the near future, as it seems to have none of the ill effects inherent in surgical procedures. At the present time, however, surgery affords the most reliable means. The possible operations are oophorectomy, salpingectomy, hysterectomy and a combination of two or more. The method chosen should be the one that places the least tax upon the woman, bearing in mind that the selection of an anesthetic is important in every case of pulmonary tuberculosis. Ordinarily, the most satisfactory is that which consists in the removal of a small portion of each fallopian tube and the suturing of the cut ends. This operation may be successfully accomplished under either spinal or rectal anesthesia.

A new possibility is presented by recent experiments with the immunization of women by the hypodermic injection of semen as an antigen. This appears to have the great advantage of affording temporary loss of fertility, which can be controlled at will.

The field of prophylactic sterilization is not narrowed to include only the tuberculous woman. The man, not burdened with phthisis nor yet a subject for major surgical procedure because of the accessibility of the organs of generation, can be easily rendered nonproductive.

The operation in common use is that of isolating the vasa deferentia and excising a small portion of each. The cut ends are then sutured. There is no danger of shock or of hemorrhage and the man's sexual activities are not impaired.

Radiation by x ray will produce aspermatism. How long this continues is a debatable question, but as the result of thorough exposure it has been found to persist for months or even years.

#### CONCLUSIONS

The treatment of pulmonary tuberculosis during pregnancy demands active measures directed to control the tuberculous process, and the use of some form of therapeutic collapse in suitable cases is often successful in bringing about an arrest of the phthisical lesion. The tax upon the patient's vitality, kidney function and lung capacity, brought about by the complication of pregnancy, has a direct bearing upon the course of pulmonary tuberculosis. Unless the pulmonary lesion is relieved by pneumothorax or phrenicotomy, the cessation of pregnancy may be brought about by the surgical removal of the fetus.

Therapeutic abortion is not so widely employed as in former years, nevertheless, where it is

resorted to, the favorable or unfavorable effect upon the patient stands in direct relation to the stage of gestation in which it is performed, the choice of the anesthetic, and the simplicity of the surgical procedure.

Sterilization, at the time of the abortion, or at a later period, may be necessary to prevent pulmonary disintegration or even death from phthisis contingent upon recurrent pregnancy.

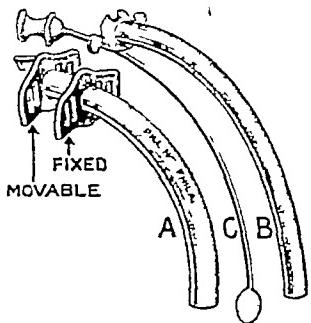
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## A MODIFIED TRACHEOTOMY TUBE

BY LE ROY A. SCHALL, M.D.\*

FOLLOWING tracheotomy, there is a variable period during which the tracheal secretion is



very profuse. During this time, the dressing becomes soaked with secretion and requires frequent changing.

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## **HEALTH OFFICERS' MONTHLY STATEMENT**

## OF VENEREAL DISEASES REPORTED

TREASURY DEPARTMENT—PUBLIC HEALTH SERVICE

DECEMBER, 1934

This statement is issued monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The following reports were received from State Health Officers. The figures are preliminary and subject to correction. It is hoped that this will stimulate more complete reporting of these diseases.

State	Syphilis		Gonorrhea	
	Cases Reported During Month	Monthly Case Rates per 10,000 Population	Cases Reported During Month	Monthly Case Rates per 10,000 Population
Alabama (a)	—	—	—	—
Arizona	22	0.49	155	3.42
Arkansas (c)	298	1.59	215	1.15
California	1,160	1.91	1,245	2.05
Colorado (a)	—	—	—	—
Connecticut	50	0.30	61	0.37
Delaware	140	5.81	31	1.29
Dist. of Columbia	127	2.57	88	1.78
Florida	349	2.25	55	0.35
Georgia	583	2.00	350	1.20
Idaho	0	—	0	—
Illinois	1,242	1.59	1,053	1.35
Indiana	178	0.54	72	0.22
Iowa (c)	151	0.61	125	0.50
Kansas	100	0.53	80	0.44
Kentucky	177	0.67	218	0.83
Louisiana	156	0.72	82	0.38
Maine	40	0.50	34	0.42
Maryland	669	4.02	190	1.14
Massachusetts	383	0.89	570	1.33

quent changing, necessitating almost constant nursing care. In changing the dressing, the tracheotomy tube is frequently moved, which causes spasms of cough with consequent expulsion of more mucus.

To overcome this difficulty, this tracheotomy tube was devised. It is essentially an extended Jackson tube with a double neck plate, the inner fixed, the outer movable. The tube is inserted in the usual manner, but the extension permits more gauze to be applied without disturbing the curve or fit of the tube.

By its use the tracheal wound is kept drier, therefore cleaner, the patient is more comfortable as he is disturbed less, and less nursing care is required.

When the tracheal secretions cease, the tube may be replaced by any of the other types of tubes which the case may indicate

Michigan	546	1 08	547	1 08
Minnesota	322	1 24	289	1.11
Mississippi	932	4 55	1,549	7.57
Missouri	645	1 76	363	0.99
Montana (c)	35	0 65	33	0 61
Nebraska	27	0 19	51	0 37
Nevada (a)	—	—	—	—
New Hampshire	13	0 28	12	0.26
New Jersey	492	1 17	250	0 60
New Mexico (c)	51	1.18	41	0 94
New York	4,507	3 48	1,157	0 89
North Carolina	830	2 53	235	0 72
North Dakota	22	0 32	38	0.55
Ohio (c)	685	1 01	340	0 50
Oklahoma (c)	246	1.18	155	0 74
Oregon	34	0 35	81	0.82
Pennsylvania	261	0.27	199	0.20
Rhode Island	127	1.81	102	1 45
South Carolina (c)	220	1 26	353	2 02
South Dakota	5	0 07	28	0 40
Tennessee	1,090	4 09	582	2.18
Texas	447	0 74	161	0.27
Utah (a)	—	—	—	—
Vermont	23	0 64	20	0.55
Virginia	389	1 59	243	1 00
Washington	207	1 29	197	1.23
West Virginia (b)				
Wisconsin (d)	114	0 38	21	0 07

(a) Not reporting

(a) Not reporting  
(b) Has been reporting regularly but no report received for current month

(c) Incomplete

(d) Only cases of syphilis in the infectious stage are reported

Survey in which all medical sources have been contacted in representative communities throughout the United States have revealed that the monthly rate per 10,000 population is 6.6 for syphilis and 10.2 for gonorrhoea.

## VERMONT STATE MEDICAL SOCIETY

## THE NEPHRITIDES\*

BY ALBERT A. EPSTEIN M.D.†

THE subject which you have invited me to consider is a very large and perplexing one. As evidence I offer the simple fact that my friend and colleague Dr. Fishberg who has already addressed you, has spent several years and some six hundred pages thrice edited, in an attempt to elucidate it. Therefore, to touch upon even a few of the high spots of the subject in a brief symposium is a very ambitious undertaking. As I have no intention of detaining you any longer than the time allotted me, I trust that you will be indulgent if I omit some points in my discussion.

Our knowledge of nephritis has passed through several evolutionary stages—the clinical, the pathological, the experimental, and the functional. As a result much information has been amassed and a vast literature exists on every phase of the subject. When the presence of albumin and of casts were regarded as the basic signs of renal disease, the concept of nephritis was much simpler than it is to-day.

The efforts of pathologists and clinicians to coordinate the morbid processes of the kidney with its clinical manifestations have created a good deal of confusion which has not been entirely dispelled even by the more recent advances in our knowledge.

A proper understanding of nephritis now requires a foreknowledge of pathology, physiology, chemistry and general clinical medicine. Without these fundamentals an adequate comprehension of nephritis is extremely difficult because of the problem of correlating the information which we gather by the different methods of analysis and investigation.

Pathology has taught us the various forms which disease of the kidneys may assume and has established their relationship to diseased processes in other parts of the body. But, the pathological concept alone has proved inadequate owing to its frequent failure to correspond with clinical manifestations and other findings. By virtue of this fact we now recognize that kidney changes may be the effect as well as the cause of many of the phenomena commonly associated with renal disease. By way of example I wish to call to your attention the reciprocal relation which exists between the cardiovascular system and the kidneys, for it is now conceded that, while cardiovascular damage may ensue

from, or be concomitant with renal disease, the converse is also true, namely, pathologic changes in the blood vessels may eventuate in disease of the kidneys. Realization of this is important, not only in connection with proper diagnosis, but in the application of therapeutic measures.

From experimental procedures on animals we have learned much concerning the intimate relationship between certain pathologic changes and the physiologic alterations of the kidney. The unqualified application of this knowledge to the clinical interpretation of renal disease is not always admissible for the reason that the conditions under which nephritis is produced experimentally, and those under which it arises clinically are not comparable. I have in mind particularly the work of those investigators who attempted to stress the functional element in the clinical concept of nephritis, and were responsible for a host of tests, many of which have now been completely discarded. I do not mean to imply that functional considerations are no longer important. Quite the contrary I merely wish to indicate that the application of functional data in the interpretation of renal disorders must be extremely guarded because the position of the kidneys in the animal economy is such that alterations in renal function may arise from causes outside the kidney. This is particularly well illustrated in the hydropic states which are frequently associated with disease of the kidneys, and which are directly traceable to extrarenal factors. Failure to realize this fact has retarded our understanding of many conditions associated with renal disturbances, for more than three-quarters of a century, and prevented the application of suitable therapeutic measures in the management of such cases.

It has become quite clear that the clinical syndromes of the various types of nephritis cannot be regarded in the light of renal pathology alone. Pathologically speaking, nephritis is an inflammatory process of the kidneys. In reality however the clinical concept of nephritis includes not only a variety of diseased processes, some of which are not of an inflammatory nature but it embraces also many abnormal conditions affecting nearly every organ and system of the body.

On the basis of our present knowledge then, the comprehension of any given case of nephritis is dependent upon three distinct factors: first, the determination of the pathologic processes involved, secondly, the evaluation of kidney function and, lastly, the appraisal of

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extrarenal manifestations which contribute to the sum total of the clinical phenomena presented. An accurate diagnosis of nephritis therefore demands a circumspect and complete analysis of all the morbid conditions present, the etiologic factors involved, the disturbance in function and other disorders which arise therefrom.

Although the anatomical classification of kidney diseases is not wholly adequate in all cases, still we must nevertheless rely upon it for guidance, because etiologic and functional classifications aid us but little and are not practical.

The types of nephritis which first require our attention are the "acute forms", namely, the acute glomerulonephritis, the acute non-suppurative interstitial nephritis, and the acute tubular nephritis or "nephrosis". Any one of these may constitute the forerunner of the contracted kidney or the large white kidney.

The problem in the diagnosis of acute nephritis is essentially different from that of chronic nephritis. In acute nephritis we have to deal with acute damage to normally functioning organs, which previously sound, are again more or less quickly restored to normal, provided they are not overwhelmed with the destructive agent. In the diagnosis of acute nephritis or of subacute nephritis, a consideration of the etiology is very important. This can usually be traced to bacteria or their toxins, or, as I believe to be the case in certain types, to constitutional disorders of metabolic or endocrine origin.

The intimate connection between infective conditions and nephritis is very well known. In acute nephritis due to the action of bacterial toxins, the renal reaction is a diffuse inflammatory process. The onset is rapid and the signs are unmistakable. Occasionally nephritis may result from actual lodgment of bacteria in the kidney substance (bacterial thrombi), giving rise, in consequence, to a disseminated focal type of lesion of which a good example is the embolic glomerulonephritis of subacute bacterial endocarditis. The diagnosis frequently depends upon the recognition of the original disease. In the more fulminating types of general infections, such as those of postpartum sepsis, or suppurative sinus thrombosis, cocci may appear in the urine associated with blood elements, pus, and granular casts. The diagnosis in such cases is self-evident. I need not discuss the clinical features of each of the acute forms. They are well known.

The existence of acute nephritis, excepting of course the chemical nephritides and the types occurring in pregnancy, therefore points usually to an antecedent infection. But renal disorders with urinary signs frequently occur in febrile diseases of all kinds which do not represent full-fledged nephritis, and thus the problem of differentiation often arises. In this lat-

ter group of cases, of course, the signs usually are not so pronounced. There is an albuminuria, at times with casts. Functional disorders, as we shall see later, also arise. But there is not, as a rule, that marked evidence of renal involvement which we find in the true cases of nephritis, nor does the disturbance last much beyond the duration of the febrile state. The difference, perhaps, is arbitrary, and one of degree only.

However, the tendency of uncomplicated acute nephritis is also to recovery, provided, of course, infective factors be no longer present and active to work new damage to the kidney. This is well shown in clinical experience by the complete disappearance of the nephritis of scarlet fever cases.

In persistent or recurring infections the condition may go on to chronicity. Present day experience with infected tonsils and sinuses as well as infections about the teeth may account for many such instances. Many cases of chronic nephritis apparently following the acute lesion have been reported, and an antecedent scarlet fever may be an important historical fact in the diagnosis. In my own experience, however, this causal factor seems to play less of a part than hitherto ascribed to it.

In the matter of chronic nephritis, the problem of etiology as a source of information is much more difficult. No doubt in a certain number of cases a history of acute nephritis or recurring infections may be elicited and a diagnosis arrived at, but the connection between the two is not always clear. At this point, I wish to call particular attention to a group of cases, of which I have seen many examples, and of which no mention appears in the literature. It concerns individuals with a seborrheic type of skin, who suffer from frequent or intractable acne of the face and body. They are particularly prone to recurrent attacks of acute nephritis which ultimately terminate in a rapidly progressive or malignant form of chronic nephritis. The clinical course of the malady in such individuals seems to be so constant that I would venture to say, that whenever one is seen in the first attack of acute nephritis, it is safe to predict that other attacks will follow, even though the first one may subside entirely. It is therefore imperative to remember that infections of the skin, even such a one as acne, may play a most important part in the causation of renal disease.

Furthermore, chronic poisoning of one sort or another, tuberculosis or syphilis may be contributory factors and require special consideration in establishing a diagnosis.

There is one difficulty that presents itself from the clinical side in investigating the question of the connection between acute, subacute and chronic nephritis, and that is, as already intimated, that acute and subacute nephritis

may appear during the course of an infection without the development of symptoms other than the urinary signs. Moreover, in the chronic nephropathies, it is the possibility and frequent occurrence of compensatory processes which create some difficulty in establishing a diagnosis. This is particularly true when the question is viewed from the functional standpoint. It is noteworthy in this connection that careful and frequent observation of the concentrating power of the kidneys together with a measure of the urinary output, is often of great assistance in arriving at a conclusion.

Notwithstanding the efforts of pathologists and others, the diagnosis of chronic nephritis still is, as it has been in the past largely conventional. While a correct anatomic diagnosis is always desirable from the standpoint of the practitioner, it is not always of especial importance, except in such cases where a differentiation is necessary of factors due to renal disease and those due to disease in other organs. I must take issue with those whose main clinical object in the study of nephritis appears to be its classification. To the practitioner this insistence has been and still is a source of perplexity and great confusion. Our aim in the diagnosis of the nephritides should not be mere-ly to establish the pathologic character of the disease, but to ascertain the facts which are vital in its treatment.

Chronic nephritis presents a great variety of symptom combinations. It would be impossible to consider them all in this brief discussion. However, certain clinical types occur with such regularity that definite rules may be established for their recognition. Thus, the chronic nephritides may be divided into two general classes: (1) the azotemic to which belong the chronic interstitial forms, primary and secondary, in which retention of nitrogenous waste products in the blood occurs leading to and terminating in uremia; (2) the hydropic, to which belong the chronic forms and the nephroses, and which are characterized by the retention of water and salt, and the development of edema. Nevertheless in certain cases the clinician finds himself embarrassed when it comes to appraising the relative value of the heart, the blood vessels, and the kidneys, in the production of some of the symptoms.

Albuminuria, with or without casts, is still the cardinal point about which all questions of renal diagnosis revolve. The glomeruli constitute the filtering apparatus of the kidney. Under ordinary circumstances water, salt and other crystalloids are permitted to go through, while the proteins of the blood (or colloids) are prevented from going through. Damage to the kidneys manifests itself not only in the rate of excretion or filtration of the water and soluble material but also by changing its attitude toward the colloids, namely, the albumins or

proteins of the blood. This is the origin of albuminuria. It is generally stated that the excretion of albumin is the result of an increased permeability of the glomerular capillaries. While this may be so, I am of the opinion, that under certain circumstances, changes in the permeability of the renal capillaries need not be the primary cause of an albuminuria. I believe that in certain instances an alteration in the biochemical character of the blood proteins may occur, so that they behave as foreign material and are permitted to go through. This mechanism is operative, I believe, in causing the albuminuria in certain renal disorders (the nephroses). That an increased permeability of the glomerular capillaries is necessary to accomplish this, is only of secondary importance. As yet, pathologic investigation is not sufficiently refined to prove conclusively just what is meant by increased permeability.

Given a case with albumin in the urine, the answer must be given whether it portends a nephritis. Is it the expression of a definite renal lesion, or some other disorder? Inquiry must be made into the history for evidences of infection, or intoxication, by drugs and other agents, syphilis, recent pregnancy, etc., to establish, if possible, a traceable etiology. The discovery of an etiologic factor does not necessarily determine the diagnosis of nephritis, but it furnishes good presumptive evidence.

In children and young adults the problem frequently arises of the differentiation of postural albuminuria. This is a common contingency, and the presence of a marked albuminuria, without casts or with rare casts, in a young person should always suggest the possibility of its being of this peculiar type. This point cannot be stressed too much. We know that examination of the separate urines passed at different times of the day and testing the effect of standing fifteen to thirty minutes in the lordotic position, will often clear up the diagnosis promptly. The large amount of protein precipitable by acetic acid in the cold is an important feature of the albuminous urine in these cases. A similar chemical reaction, however, is frequently obtained in the albuminuria which occurs in association with glycosuria in diabetes. Other evidences of renal disease in these cases may be entirely wanting but the albuminuria does not seem to be of postural origin.

Aside from these and the other group, there is a large number of patients in whom no assignable cause for the albuminuria can be found. Local causes in the urinary tract may be responsible for the albuminuria (stones, tumors and other conditions). These conditions, of course, should be excluded.

Although our knowledge in this matter is not complete, we know that certain anatomic peculiarities of diseased kidneys are character-

istic of different operating causes. So that etiology may not only aid us in determining the presence of renal disease, when the cause of the albuminuria is established, but also in divining the exact nature of the trouble.

If we wish to gather all possible clinical data we will not rest content with historical facts, nor with an anatomic diagnosis of nephritis, but will proceed to determine the degree to which the kidney function has suffered.

Generally speaking, the functional methods of renal diagnosis are divisible into two groups (1) those which aim to ascertain the character and extent of renal disease by estimating the response of the kidneys to physiologic stimuli, (2) the other aims to determine the nature and degree of the damage, arising from the insufficiency of the kidneys.

To this first group belong those tests which depend on the excretion of substances administered in known quantity, which are recoverable more or less completely from the urine. To the second belong the direct observations on the blood and urine.

Many considerations render the study of renal function a very complex problem. It is a mistake to regard any one functional test as being capable of measuring renal function as a whole, as each test at best covers only a limited range of kidney activity. To maintain normal conditions in the body the kidneys need perform but one function, namely, adequate filtration. Thus they can achieve by excreting a limited, but suitable amount of concentrated urine, or, by excreting a large amount of dilute urine. The factor of safety in this respect is indeed very great. As stated before, the glomerulus is the filtering apparatus of the kidney. The number of the glomeruli in the two kidneys is very great, and we know that only a limited number of them are at work at any one time. It has been definitely established by experiment, that the glomerular content of about one-third of one kidney is sufficient to maintain the excretory needs of the body in normal equilibrium.

Experience has shown that the most constant effect upon kidney function, arising from chronic disease within it, is its inability to concentrate urine. This disability, as has already been intimated, may be largely overcome by a compensatory increase in the amount of urine excreted, and no ill effect need follow. It is only when both the concentrating power and the compensatory diuresis fail, that dire results ensue.

The normal function of the kidneys comprises among other things, the elimination of the waste products of nitrogenous metabolism. Failure on the part of the kidneys to function properly causes ultimately a retention of these substances in the body and their accumulation in the blood. The tests measure one or another of these sub-

stances, all of which come under the heading of incoagulable or nonprotein nitrogen. The level of the nonprotein nitrogen of the blood must be determined as the resultant of at least three factors namely, kidney efficiency, diet, and protein destruction. In appraising kidney function on this basis, due credit must be given to each of these factors. One other factor, usually ignored, is of the greatest importance, and that is the fact that, in renal conditions associated with edema, much of the retained nitrogenous waste products are distributed throughout the body in the retained fluid, so that the blood does not show the same concentration that it would, had there been no edema. It is not uncommon to find in such cases, that the nonprotein nitrogen in the blood increases as the edema subsides.

Certain investigators lay the greatest stress on accumulation of urea in the blood, others believe that uric acid and creatinin give the earliest and best indication of renal incompetency and disease. For my part, I believe that the nonprotein nitrogen as a whole or its one component urea, gives the best indication of renal disease. In the absence of edema, a persistently low nonprotein nitrogen or urea in the blood, does not signify that nephritis is not present, but it does indicate that the functional capacity of the kidneys is adequate for the excretion of the waste products from the blood.

As a prerequisite to the proper interpretation of the results obtained in the study of renal function, extrarenal factors which are capable of modifying or influencing them, should be definitely excluded. The reasons for this are manifold.

It is generally known that cardiac insufficiency may give urinary signs like those of renal disease, and functional tests may also yield evidence to that effect. Following febrile conditions, renal function may remain disturbed for some time after the fever has subsided. In severe or pernicious anemia, the kidneys may behave in very much the same way as they do in nephritis.

There is one group of cases in which the renal function is extremely deranged, particularly as it relates to water and salt excretion, and yet the cause of the disturbance resides largely, if not wholly, outside the kidney. I refer here to the type known as "chronic nephrosis". It is characterized clinically by an oliguria and intense albuminuria, with a tendency to the development of edema.

I have just spoken of oliguria and edema and intimated that they may be of extrarenal origin. As these two phenomena occur frequently in association with renal affections, further elucidation may be in order. Oliguria, or diminished urinary excretion, may result from a variety of

causes which directly or indirectly affect the kidney, as for example inflammation, as in acute nephritis, congestion as in circulatory disturbances arising from interference with venous blood flow, due either to pressure, portal thrombosis, cirrhosis of the liver, circulatory collapse or limited availability of water for excretion due to alterations in the chemical composition of the blood. This last element is of importance in all instances where the protein or colloid content of the blood is diminished with consequent reduction of the osmotic pressure of the blood, a condition which permits the flow of water into the tissues, and thereby prevents the kidney from excreting it. Hand in hand with the factors concerned in the production of oliguria, are those responsible for edema. When the kidneys become affected, as by acute inflammation or congestion, and the urinary excretion becomes reduced, fluid is gradually retained in the body. At first it may be imperceptible, but gradually, as the condition progresses, deposits of fluid appear under the skin or in the serous cavities. Some of this may be due to actual inability of the kidneys to eliminate fluid some however, may result from damage or engorgement of the blood capillaries. By virtue of the increased pressure within them, some of the fluid content of the blood filters through into the tissue spaces. As evidence of this, is the fact that the edema which develops under such circumstances is composed of a fluid which resembles the serum of the blood in many respects.

However, fluid under the skin and in the serous cavities may be deposited by a different mechanism, one in which neither the kidneys nor the circulatory apparatus are directly concerned.

The proteins of the blood serum are greatly concerned with the regulation of fluid exchange between the blood and the tissues. Normally the blood serum contains six to eight grams of protein per 100 cc. at least five grams per 100 cc. are necessary to maintain the fluid exchange in equilibrium. When the protein content falls below this level, the blood loses its optimum osmotic pressure, the fluid exchange becomes unbalanced and the flow of water and its dissolved salts is from the blood stream in the direction of the tissues. In consequence of this, subcutaneous edema and effusion into the serous cavities take place. The kidneys actually have nothing to do with this process. Because of the mechanism involved (reduced osmotic pressure) the edema and serous effusions are almost water clear, and contain little or only traces of protein.

It is this type of edema that occurs characteristically in the condition known as "nephrosis". The underlying cause is the reduced protein content of the blood serum, conditioned by an excessive loss through the kidneys, i.e. the

albuminuria. Loss of protein from the blood from any cause or in any manner which impoverishes it to a sufficient degree is capable of inducing this type of edema. It is by virtue of this fact that a variety of nephritic conditions with intense and prolonged albuminurias, develop in due course an edema of this character, and are designated as cases of "nephritis with the nephrotic component".

Of course profound loss of protein from the blood is accompanied by other changes in the composition of the blood, for instance, change in the relation of the individual fractions of the serum protein, and in the content of fatty or lipid material which generally becomes greatly increased. It is my belief that a real difference exists between the true cases of "nephrosis" and those cases of "nephritis with the nephrotic component", namely, that in the true "nephrosis" the blood changes mentioned appear earlier, and that they are more profound. Certain clinical differences exist between these two conditions (1) the urinary findings characteristic of renal inflammation are usually lacking in "true nephrosis" and (2) changes in the cardiovascular system, in the eye grounds, etc., are also wanting. So that under ordinary circumstances the distinction can be made readily. Time will not permit me to go into further details, I might state in passing however, that differences in age incidence and the absence of any determinable etiology are often helpful in establishing a diagnosis of "nephrosis".

Apart from the academic interest of any disease, the question which interests the practitioner most is treatment, and I cannot conclude my discourse without a few words on this subject. It is very gratifying to note the realization by most men in our profession, that nephritis is not a disease entirely restricted to the kidneys, and no specific therapeutic measures which can be directed to the kidneys are available.

In the matter of the acute nephritides and those forms of chronic nephritis which result from recurrent attacks of the acute varieties, preventive measures, i.e. the elimination of the causes which operate in their production, should be applied. Foremost among these causes are the various intoxications (and in these may be included pregnancy with eclamptic tendency), and the different general and focal infections. Inasmuch as the acute nephritides are usually self limited, and for the most part run a favorable course, the palliative measures are few and simple. General hygienic procedures, as well as sparing the kidneys any unnecessary work from improper nutrition such as limitation of protein and salt intake, are almost always sufficient. Mild alkalinization may be in order, but symptomatic treatment is rarely acquired, and the use of drugs to promote the

elimination of urine should be entirely interdicted. A general "hands off" policy is, more often than not, the best course to pursue

Of course there are many instances in which an acute nephritis does not subside completely, certain others which do not progress into slow and gradual chronicity are rather fulminating in character with marked cardiovascular changes and renal insufficiency, leading to profound intoxication and ultimate uremia. The existence of edema, contrary to general opinion, is not an untoward symptom, and in the presence of a severe azotemia should not be combated. The therapy of such cases is extremely difficult. Measures which promote vasodilation, counterirritation, phlebotomies, infusions of glucose, and on occasions decapsulation may be of benefit. This latter procedure does not, however, often prove beneficial and should be resorted to only in extreme situations. Blood transfusions are not desirable, in fact in my opinion are definitely contraindicated.

With the exception of the nephroses, the chronic nephritides present somewhat different problems, although in the main, the principles involved in their treatment are the same as those underlying the treatment of the fulminating varieties of the acute forms. They are symptomatic and palliative in character. The subject is rather simple when considered in three stages: the first relates to the defective kidney function and its effects upon the composition of the blood, the second is concerned with the cardiovascular changes and their sequelae, and, the third involves the retention of water, i.e., edema.

The methods which are most serviceable in combating these three sets of symptom complexes of chronic nephritis are undoubtedly known to you all, and it would be prolix to attempt to describe them. Above all a common sense attitude is necessary, and it is well to remember that the chief functional requisites of the kidneys are the elimination of water and salt and the nitrogenous waste products. Inasmuch as the clinical picture which any case presents is usually the composite of symptoms arising both from renal and extrarenal causes, the therapeutic measures employed must be directed toward the different components of the clinical complex. If it is the azotemia which is paramount, then its source, namely, protein intake, must be reduced to a minimum. Nitrogenous waste from tissue deterioration is best controlled by liberal carbohydrate administration in any and every form. Abundant fluid administration may also be useful when water excretion by the kidneys is unaffected.

The symptoms which arise from cardiovascular changes (whether primary or secondary) are best controlled by those agents which reduce and maintain the blood pressure at a safe level, and preserve the competency of the heart.

Water retention, as stated above, may be of renal, circulatory, or blood origin. The methods employed to overcome it must be suited to the mechanism which causes the retention. It should be remembered that medicinal agents calculated to aid the function of the kidneys are usually ineffectual, and should be avoided. So that, when water retention is of renal origin, vasodilators, phlebotomy and counterirritation should be used, but only in such instances where there is no co-existing azotemia. When azotemia is present, the retention of water in the body is often a useful circumstance and delays the development of uremia. Water retention due to circulatory failure should be treated with measures appropriate to such a condition, but the use of mercurials should be avoided.

By retention of water of blood origin, I mean the hydropic state which results from the reduced protein content of the blood serum conditioned by an intense and protracted albuminuria. This, as already stated, is encountered in nephrosis, and in nephritis with the nephrotic component. The medication in both sets of conditions is, of course, the restoration of the protein content of the blood serum to normal. This is best achieved by the administration of large amounts of protein in the diet. This principle is applicable in all cases where the protein content of the blood stream is reduced, with the exception of those in which a marked azotemia is also present. In such cases the protein intake in the diet should be maintained at the basal level, particularly if the specific gravity of the urine is persistently and consistently low. It is better under such conditions to have an edematous than a uremic patient.

In nephrosis the administration of certain agents which promote water excretion such as the mercurials, urea, ammonium chloride and calcium salts, is permissible. But, as I have reiterated on repeated occasions, the object in the treatment of the nephroses should be not only the promotion of water excretion and the removal of edema, but an earnest effort should be made to cure the condition. In certain cases the administration of large amounts of protein together with the use of adequate doses of thyroid, must be persisted in over long periods of time in order to attain a result.

The expression "last but not least" does not apply to the question of prognosis. For my own part the less said about it the better. The cases of acute nephritis are usually self-limited and offer a favorable outlook, particularly when the cause is established and removed. With the chronic nephritides the case is different. Our therapeutic attainments leave much to be desired, and I do not know of any method or device by which an exact prognosis can be formulated. It is only in the case of true neph-

ross that the outlook is good. Barring complications (such as erysipelas and peritonitis of pneumococcal origin) which are not infrequent, it is my firm conviction that the condition is not only amenable to satisfactory treatment but is capable of complete cure.

## MISCELLANY

### VERMONT DEPARTMENT OF PUBLIC HEALTH

JANUARY 1935

The incidence of communicable diseases during January is as follows: chicken pox 216, diphtheria 3, infantile paralysis 2, measles 91, mumps 6, scarlet fever 114, undulant fever 1, tuberculosis 5 and whooping cough 302.

The Laboratory of Hygiene made 1,663 examinations during the month classified in the following manner:

Examinations for diphtheria bacilli	234
" Widal reaction of typhoid fever	34
undulant fever	40
" gonococci in pus	139
" tubercle bacilli	184
" syphilis	551
of water bacteriological	181

Examinations of water chemical and bacteriological	29
" milk market	191
milk submitted for chemical only	11
milk submitted for microscopical only	0
foods	15
" drugs	0
for courts autopsies	3
courts miscellaneous	6
miscellaneous	52
Autopsies to complete death returns	0

Twenty-nine cases of gonorrhea and nineteen cases of syphilis were reported to the Division of Venereal Diseases during January. One thousand one hundred and twenty-four Wassermann outfits and 402 slides were distributed by this Division.

The nurses of the Poliomyelitis After-Care Division made forty-three home calls, four social calls, visited six doctors and made fifty-three visits during the month. Five pieces of apparatus were fitted to patients, four orthopedic corrections made to shoes, two patients admitted and one patient discharged from the Children's Hospital. Eight patients were admitted and two discharged from the Audubon Hospital and one patient discharged from the Massachusetts General Hospital.

The vocational worker of this Division reports sales made to the amount of \$109.08 for the month.

### YALE MEDICAL SCHOOL GRADUATE WINS PEDIATRIC PRIZE

Dr Leona Baumgartner who graduated last June from the Yale University School of Medicine, has been awarded the prize offered by the New England Pediatric Society for the best paper presented last year by fourth year medical students in New England on a subject of scientific interest in connection with the health of children. The subject of her paper was "Age and Antibody Production."

The award to Dr Baumgartner was the fifth successively to be won by Yale medical students. Dr Jacob Greenberg won the prize in 1933, Dr David J. Cohen in 1932, Dr Abraham J. Schechter in 1931 and Dr Robert D. M. Cunningham in 1930. The amount of the prize is \$100.

Dr Baumgartner graduated from the University of Kansas in 1923 obtained a Ph.D. degree at Yale in 1932 and an M.D. degree in 1934. She is now an intern at the New York Hospital.

School of Medicine since 1919 has been made acting director of the Division of Maternal and Child Health, United States Children's Bureau. In her new position Dr Dunham will be associated with Dr Martha M. Elliot, a former member of the Yale Pediatric Staff who was recently appointed assistant chief of the United States Children's Bureau.

Dr Dunham is widely known as an investigator in the field of child health. For the past eight years she has devoted much of her time to research on the diseases of newborn infants. Her work has been effective in directing attention to the causes of infant deaths in the prenatal period and to preventive measures.

Dr Dunham was one of the first women to be elected to membership in the American Pediatric Society and is chairman of the Society's committee on the study of the prematurely born child. She also holds membership in the American Academy of Pediatrics. She obtained her medical degree at Johns Hopkins. After spending one year at the Johns Hopkins Hospital as resident house officer, she came to the New Haven Hospital where she has since risen to the rank of associate clinical professor of Pediatrics in the University and attending pediatrician to the New Haven Hospital.

### THE APPOINTMENT OF DR. ETHEL C. DUNHAM

Dr Ethel C. Dunham, a member of the staff of the Department of Pediatrics of the Yale University

**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES****EDITED BY RICHARD C CABOT, M.D****CASE 21091****PRESENTATION OF CASE**

Approximately five months before entry the patient, a thirty-three year old single stenographer, experienced an attack of sharp midabdominal pain which lasted for several hours. This was not accompanied by nausea, vomiting or other gastro-intestinal disturbances. She remained in bed for two days. On the morning of admission while still in bed she suddenly developed severe, non-radiating, midabdominal pain. She felt hot but did not vomit. Her physician who was called late that day advised immediate hospitalization.

Her family history is non-contributory.

Fifteen years before entry she had a severe attack of rheumatic fever following which she developed a slight cardiac lesion. She had a tonsillectomy nineteen years before entry. Her menstrual periods were always regular, lasting five or six days, and always associated with severe cramp-like pains. There was a slight discharge preceding each period. At the time of admission she was in the midst of a menstrual period and had lower abdominal cramp-like pains.

Physical examination showed a well-developed and nourished woman lying quietly in bed. The chest was negative. There was a late, rough diastolic murmur at the apex. The lower midabdomen showed moderate tenderness. The abdomen was soft and level. No organs were felt.

The temperature was 101°, the pulse 88. The respirations were 22.

Examination of the urine was negative. Examination of the blood showed a white cell count of 17,400.

At operation, on the day of admission, the appendix was found in the pelvis. Scattered over the peritoneal surfaces of the large and small bowel, as well as on the parietal peritoneum, were flecks of brownish mucoid material. This was especially marked in the region of the appendix. This material could be rubbed off the bowel in places, but in others it seemed to be in a thick layer and did not yield to rubbing. The appendix did not appear reddened, but its distal half was firm and nodular. It was removed. Further exploration of the pelvis showed a normal uterus. The right ovary

was slightly enlarged but not otherwise abnormal. The left ovary was not very well seen but as nearly as could be determined was normal to palpation. There was a slight amount of turbid fluid in the pelvis. She did well post-operatively and was discharged on the thirteenth day.

**DIFFERENTIAL DIAGNOSIS**

DR JOE V MEIGS "She remained in bed for two days." This statement makes me think that this patient's discomfort must have been a real attack of something. After a second attack her physician advised immediate hospitalization. Again she must have had a real attack of something for her physician apparently thought that she should be under cover in a hospital so she could be operated on if necessary. This sharp, sudden pain may possibly have been appendiceal in origin, but one should think of a rupture of some viscous which came on suddenly, perhaps something broke which caused acute pain, or else she had a stone of some kind.

Her cardiac lesion makes one think of a possible embolus in the mesentery which might have caused the attacks of pain that she had had.

Her menstrual history is quite negative. She had a moderate amount of discharge before the onset of the menstrual period. That is not unusual, rather more usual than not.

"At the time of admission she was in the midst of a menstrual period and had lower abdominal cramp-like pain." I do not see how we can use that information at all. She had pain and also had menstrual pain, and I think it would be very difficult to differentiate that and another pain. However, if this pain were different from the menstrual pain it might possibly be due to bleeding from a ruptured ovary such as a ruptured follicle or ruptured corpus luteum. It is unusual to find this happening at the time of the menstrual period, although it is possible for a patient to have bleeding from a corpus luteum at the time of flow, unusual but possible.

"The lower midabdomen showed moderate tenderness." That would go perfectly well with appendicitis or with a ruptured cyst, though midabdominal pain is more in favor of ruptured cyst than an appendix.

"Examination of the urine was negative." Although that does not rule out stone in the kidney, it makes me feel it is less likely.

"Examination of the blood showed a white cell count of 17,400." That would be consistent with the temperature and a diagnosis of appendicitis but it also could be due to a ruptured cyst with bleeding in the pelvis.

We also have to consider the possibility of an extrauterine pregnancy, but with an attack five months earlier of a similar nature it would seem unlikely. On the other hand her previous

attack of pain may have been entirely different and she may have had an extrauterine pregnancy which ruptured at this time.

"At operation the appendix was found in the pelvis." That would account for the fact that there was very little tenderness or spasm, only moderate tenderness in the abdomen.

"Scattered over the peritoneal surfaces of the large and small bowel, were flecks of brownish mucoid material. Many times while operating on patients I have seen brownish flecks of material on the parietal peritoneum and on the bowel. It has usually been in the nature of old blood or bloody spots, bluish in character, sometimes purplish which have been taken to be areas of hemosiderin or ectopic endometrium spilled from a ruptured ovary, or poured through the tube, and growing to the peritoneum or viscera. The fact that this material was mucoid rather confuses the picture for me. It would be my feeling that the appendix might easily be involved in such a lesion."

"This material could be rubbed off the bowel in places", showing that it probably was blood, or lightly attached new growth of a mucoid type. "But in others it seemed to be in a thick layer and did not yield to rubbing." In other words, if there had been a rupture of the ovary five months ago, it might have become organized on the wall of the bowel and therefore could not be rubbed off.

If the appendix was not reddened one would surmise that it was not an acute appendix, but as it is described as nodular and firm it might easily be a lesion in the appendix, either a carcinoid tumor, an adenomyoma or possibly a mucinous tumor of the appendix such as a mucocele or a tumor similar to a pseudomucinous cystadenoma. Mucoceles grow in that region and may give rise to a pseudomucinous peritonitis.

"The right ovary was slightly enlarged but not abnormal otherwise." This spoils my diagnosis, because the ovaries should not have been absolutely normal, and enlargement alone does not answer the question for me. If this ovary had been adherent or had a rupture in it, one would guess that she had a ruptured follicle, or a ruptured corpus luteum or a ruptured endometrioma or chocolate cyst of the ovary, but as the ovaries are normal it is difficult to make that diagnosis. On the other hand if this patient was operated upon through an appendix incision and it was necessary to explore the pelvis by mere feeling with the hand and not actually seeing, one might miss a lesion in the wall of the ovary. Most endometriomas of the ovary are adherent because they have ruptured and have become fixed to whatever they happen to lie against after a rupture.

"The left ovary was not seen very well but as nearly as could be determined was normal to

palpation." It might be possible that that was the ovary which was in trouble and since it was not seen a lesion might have been missed. Certainly a small bleeding area from a corpus luteum could be missed if one depended on palpation.

"There was a slight amount of turbid fluid in the abdomen." This is rather confusing to me, if it had been bloody fluid I would have thought of a ruptured corpus luteum, if it had been chocolate fluid I would have thought of a ruptured chocolate cyst, but the turbid fluid makes me feel that it must have been inflammatory.

The tubes are not described and whether they are involved in this lesion I cannot answer. I believe the diagnosis is not extrauterine pregnancy because of the history and findings, but since the tubes have not been mentioned, and as we do not know what they were like, we must consider the possibility of extrauterine pregnancy. I feel that this patient probably had a cyst of the ovary which had ruptured probably five months before—if that attack is to be brought into relation with the present one, explaining the old blood in the pelvis and the areas that could not be rubbed off, and then it ruptured a second time producing the flecks that could be rubbed off easily. I believe that she probably had a ruptured endometrioma with a scattering of endometrial like tissue through the pelvis and an endometrioma of the end of her appendix. Her age, thirty three, fits in very nicely with endometriosis because it is at about that age that it usually occurs. I will commit myself to the diagnosis of endometriosis, with rupture of an ovarian endometrioma and involvement of the appendix in the tumor.

#### CLINICAL DISCUSSION

DR. TRACY B. MALLORY Dr. Fitchet, this patient was under your care. Perhaps you can tell us a little more exactly what you found at operation and what you think about it.

DR. SETH M. FITCHET I congratulate Dr. Meigs on making the diagnosis on something I could not diagnose at operation. This patient did have nausea. The record says she did not. The lower abdomen did reveal moderate tenderness, but it was more marked on the right than on the left, there was distinct spasticity on the right as compared with the left. The record says that the abdomen was soft—it was not soft in the lower half, it was distinctly spastic on the right and less spastic but still spastic, on the left. Pelvic examination was not done. On rectal examination there were no masses present in either vault, but there was distinct pain and this pain was marked on movement of the cervix.

I did, as Dr. Meigs pointed out, make an improper incision for a pelvic operation. I made an incision for an appendectomy because I be-

lieved from the story and from the physical findings, including temperature and leucocyte count, that this was a fairly typical case of acute appendicitis. So I made the usual right rectus, muscle retracting incision and that accounts for the limited exploration which could be done at operation. The material was mucoid in character and was not bloody. Flecks of this material handled as if it were very viscous mucus. Other particles could not be separated from the bowel peritoneum. There was no bloody material in the pelvis or anywhere else in the abdomen. As nearly as I could describe the free fluid in the abdomen it was turbid and not bloody fluid. The tubes were not mentioned because they were normal, so far as could be determined by feeling them and seeing them through the appendix incision. The right ovary was distinctly larger than the left, not roughened, and it showed no evidence of adhesions, it was freely movable. The left ovary was smaller than the right ovary, but could not be seen so well. As far as it could be seen and felt it was normal. The appendix was shaped very much like one of these telephone dialing pencils, a pencil with a knob on the end of it. The appendix was definitely not injected, but was a fairly long appendix and on the very tip was this ball-mass. We thought of endometriosis and mentioned it, but our findings were not consistent with the diagnosis of endometriosis as we had seen it. We called a pathologist and he was unable to make a diagnosis from the gross appearance of the opened abdomen and the appendix itself. He made a frozen section and was able to report only that it was not malignant. The tip of the appendix was firm and hard. It was not a cystic or mucoid type of swelling, it was definitely hard and firm. The area about the appendix where it lay against the pelvic wall was definitely injected and there was a greater amount of mucoid material there than there was scattered over the other areas involved. In the absence of a sure diagnosis a drain was placed in the pelvic area involved and the wound was closed. She started an apparently normal menstrual flow the day after operation and during the time she flowed from the vagina she had a copious flow from her draining wound, far more than the abdominal findings would lead one to expect. She saturated many dressings daily. This abdominal flow of a bloody-like discharge ceased at the time she stopped flowing from the vagina, it suggested an abdominal wound menstrual flow. Her convalescence proceeded normally and comfortably every other way. Her wound healed promptly without sinus formation.

#### DR JOE V MEIGS' DIAGNOSES

Ruptured endometrial cyst of the ovary  
Endometriosis of the appendix

#### PATHOLOGIC DIAGNOSES

First operation Endometriosis of appendix  
Healing appendicitis

Second operation Endometriosis of ovary

#### PATHOLOGIC DISCUSSION

DR MALLORY In corroboration of Dr Fitchet's statements, the laboratory did see this fluid which was certainly not the ordinary chocolate fluid that one would expect in endometriosis and we did attempt to make a frozen section from the tumor-like swelling of the appendix and were unable to recognize any endometrial glands. When the celloidin sections came through two days later we found frank endometrial cysts in a number of spots along the wall of the appendix, no single one that was very large, but a great many small ones.

DR MEIGS If I had known it was mucoid material I do not think I could have made the diagnosis, but the fact that you said it was "brownish" made me feel that it was old blood scattered over the viscera and peritoneum and you do see endometriosis in the appendix not infrequently. Perhaps I would not have made the diagnosis if it had been mucoid alone. The word "brownish" suggested old blood.

Another thing I had difficulty in explaining was the temperature of 101° and the white count of 17,000. That would go all right with a ruptured ovary or corpus luteum but not with an endometrioma, unless it were infected or twisted and had just ruptured.

DR MALLORY There was also a certain amount of eosinophilic infiltration of the walls of the appendix, so I think it is well within the limits of possibility that it was appendicitis, but we did not feel perfectly sure that we could differentiate the inflammatory reaction to spilled blood from that attributable to bacterial reaction. In this case I think it is possible that there may be some element of appendicitis.

DR MEIGS It would be difficult to explain the symptoms purely on the basis of a chocolate cyst unless it had just ruptured. It gave pain.

DR MALLORY There is a little subsequent history that Dr Fitchet will give us.

DR FITCHET After determining that this was endometrioma the question came up as to what further should be done. Frankly, I did not know. I talked with roentgenologists and I talked with surgeons as to the desirable thing to do. The question to be decided was whether to do a castration by x-ray or a castration surgically. Six months after the appendectomy the girl decided that she preferred surgical castration, so she was readmitted and through a proper incision this time her abdomen was inspected. The enlarged right ovary which had been noted previously was definitely tied

down in the retrocervical position. It was so firmly adherent both to the cervix and posterior structures that it could not be moved without tearing. The process in the ovary was markedly infiltrating the adjacent tissues. The left ovary was not grossly involved. The tubes were not grossly involved. Because we had decided on a surgical castration I removed both ovaries, in removing the right ovary I ruptured a cyst which had not been apparent, and part of the wall of that cyst was firmly adherent to the retrocervical portion of the uterus. I felt that I had not removed all of the involved peritoneum. Following operation she had a normal comfortable convalescence. After consultation with the roentgenologists it was decided to give x ray therapy because of the infiltrating character of the process. It is now eight months since the second operation and she is symptom free.

DR. MALLORY At the second operation the endometriosis was, as Dr. Fitchet said limited to the right ovary and adjacent tissues, where several good sized chocolate cysts were found. The other ovary contained a corpus luteum but showed no evidence of endometriosis.

DR. MEIGS Dr. Allen has just asked me why x ray treatment does not cure them all. As a matter of fact cases that I have seen and advised x ray treatment have been perfectly satisfactory. I think it ought to work in all cases. We had one case that is worth mentioning. The patient had endometrioma in one ovary which had been removed and later in the other ovary which was also removed. Then she developed fibroids and began to bleed abnormally. The reason she bled was that in removing the ovaries they did not remove all of the ovarian tissue, just as Dr. Fitchet said he did not think he had. She developed a nodule in the skin and Dr. Vincent removed a piece of this tumor, which turned out to be a typical endometrioma. We then saw her in the Tumor Clinic and this tumor, in spite of the fact that both ovaries had been removed, would swell and cause pain periodically. There were no symptoms of the menopause, no hot flashes and no disturbance of the nervous system. We thought it worth while to treat her with x ray to destroy the remaining ovarian tissue. Within six weeks she had hot flashes and within six months the lesion in the abdominal wall had atrophied so that it could hardly be felt. Another case had an endometrioma of the rectovesical septum. She had a positive diagnosis made by biopsy and at the end of one year the tumor, which had been the size of a horse-chestnut when x ray treatment was started, was reduced to a small white scar. I see no reason why others should not be so treated.

## CASE 21092

## PRESENTATION OF CASE

*First admission* A fifty six year old American housewife entered complaining of intermittent abdominal pain of four months' duration.

Three weeks before entry she first consulted a physician because of an ache which originated somewhere above the left hip and ran down to the hypogastric region, occasionally to the groin. There was no history of nausea, vomiting, chills or fever. A diagnosis of abdominal tumor was made. At the time of admission she was having no abdominal pressure symptoms or any other discomfort.

Her family and marital histories are non contributory.

Five years before entry she had had what was diagnosed as colitis, and since then she had been on a special diet which had given her some relief. The menopause had occurred six or ten years ago. Since then she had no bleeding but did notice slight leukorrhea. There were no urinary symptoms.

Physical examination showed a well-developed and nourished woman in no pain. The lungs were negative. A slight systolic murmur was heard at the base of the heart. Abdominal examination showed a clearly outlined, firm freely movable suprapubic mass filling approximately the midportion of the pelvis.

At operation on the third day a large cystic tumor was found filling the entire pelvis and abdomen as far as the umbilicus. There was also a large cystic area on the left side. The omentum and intestines were adherent to the tumor everywhere and it was with some difficulty that these were stripped off the mass. The appendix which was surrounded by tumor, was freed with some difficulty and removed. The tumor was shelled out of the pelvis and removed. The right ovary was involved, but the left was free of disease. A supravaginal hysterectomy was done, removing the other tube and ovary and part of the broad ligament, which was covered with tumor. There was no evidence of tumor at the end of the operation. There was, however, some bleeding and an area on the small intestine was found oozing rather rapidly. This was sutured.

Her convalescence was uneventful except for a mild colitis consisting of three or four movements a day with a little mucus but no blood. She was discharged on the twentieth postoperative day.

*Second admission.* Approximately two and a half years after discharge.

*History of Interval* Since discharge she had gained rapidly in strength, her appetite was good and her bowels moved fairly regularly. One month after discharge she received two

x-ray treatments of 1000 R to the anterior and posterior pelvis over a 20 by 20 field

During the six months before this entry she had four attacks one six months ago, another three months ago and two within the past three weeks. These attacks were characterized by an aching pain, usually over the left side of the abdomen, and associated with "mucous" diarrhea and vomiting. In addition, she had pain in the left upper quadrant which she described as being similar to labor pains. It came on at any time of the day or night and was relieved by a hypodermic, but not by food or enemas. They were not associated with fever or chills. The last two attacks followed a day in which there was no bowel movement.

On physical examination there was moderate tenderness in the left umbilical region. The liver was felt two centimeters below the costal margin. The right kidney was also felt.

The temperature, pulse and respirations were normal.

Examination of the blood showed a red cell count of 4,540,000, with a hemoglobin of 75 per cent. The white cell count was 6,100, 51 per cent polymorphonuclears. The stools were thick, yellowish brown in color, and contained a large quantity of mucus, some fat, but no blood.

X-ray examination of the abdomen showed kidney outlines on both sides. The left kidney was slightly smaller than the right, but neither was large. There was no evidence of stone. A barium enema was negative. A gastro-intestinal series showed no evidence of obstruction. The coils of ileum were slightly separated and in an unusual position but there were no pressure defects or evidences of extrinsic tumor. An intravenous pyelogram confirmed the previous findings. A Graham test was negative.

Because of the negative studies she was discharged six days after entry without exploration. If further attacks occurred she was to return for operation.

#### *Third Admission* Three weeks later

Two days after leaving the hospital the patient began to have vague abdominal pains during the middle of the day. In a few hours these pains gradually became more severe and assumed a cyclic periodicity, coming on about every seven minutes. Toward evening they became very severe, knife-like in character, and were sharply localized to an area just above the umbilicus. A physician administered a hypodermic and twelve hours later the pain was so severe that another hypodermic was necessary. The next morning she felt somewhat weak but the pain had disappeared. Seven, five and two days before entry the patient had similar but milder attacks. These attacks had no effect on her bowel habits and were not related to eating. She vomited only at the end

of the first severe attack. She felt perfectly well between these attacks. There were no bloody or tarry stools and no diarrhea.

On the third day operation was performed

#### DIFFERENTIAL DIAGNOSIS

DR LINCOLN DAVIS Dr Mallory asked me to come down here to discuss this case. I hope he did not have any ulterior motives. I am out of practice at this sort of thing, but I do not believe tumors have changed in the past few years. Treatment may have changed somewhat but the tumors are the same.

The first admission may be briefly dismissed. At operation a large partially cystic tumor was found which undoubtedly originated in the right ovary and was either adherent to or had actually invaded the intestines and the appendix.

"The appendix, which was surrounded by tumor, was freed with some difficulty and removed." I should think that might mean that there was tumor growth on the appendix but the statement is not so clear as one would wish.

"She received two x-ray treatments of 1000 R." What does that mean?

DR GEORGE W HOLMES "R" stands for Roentgen, and Roentgen is the term used for specifying x-ray doses.

DR DAVIS We are probably justified, therefore, in assuming that the tumor was malignant. After a two year interval of good health she develops a new symptom consisting of attacks of pain which are described as "cyclic". There is also a pain described as "similar to labor pains", with a slightly different location. It is not clear to me whether this was really a different type of pain. At the second admission these attacks of pain appeared to be connected with periods of constipation though in the final admission this relationship is denied in the statement "these attacks had no effect on her bowel habits". I wonder if her bowel habits had any effect on the attacks, whether the passage of gas or fecal matter relieved the pain. It does not say.

The record of the abdominal examination is scant. On palpation there was an area of tenderness to the left of the umbilicus. We presume that there was no spasm, no mass, no visible or audible peristalsis. I would feel more comfortable if the vaginal examination were explicitly recorded, but again I assume that it was done and nothing of importance discovered. The patient was not jaundiced, the Graham test was negative. X-ray of the urinary tract was negative and the urine examination presumably showed nothing since it is not mentioned.

We have nothing, therefore, in the way of physical or laboratory findings to back up the story. It seems to me we would really want more data before performing an operation—a view probably shared by her physician since she was discharged without treatment. The

symptoms promptly recurred, however, with increasing frequency and severity and she entered the hospital for the third time.

It seems from this story that the pain was of a colicky sort, a rhythmical colic. It is stated that it was something like labor pains. We could rule out appendicitis because the appendix had been removed at the previous operation. Gall stones or renal or urethral stones presumably can be ruled out because there was a negative Graham test and a negative x-ray examination. Could this possibly be a uterine colic? We have seen cases of uterine colic due to an extruding fibroid or some other growth in the cavity of the uterus. She had had the body of the uterus removed. The cervix was there I suppose. A growth in the cervical canal might possibly give rise to colicky pain, but I think that is very unlikely. Intestinal colic due to intermittent small intestine obstruction seems the most likely, possibly a volvulus or adhesions. She had had a previous operation. She had had a growth of some kind which was quite widespread with adhesions to the abdominal organs and with tumor growth adherent to the tubes and other organs. We know she had x-ray treatment after that, suggesting that there was a question of malignancy. This tumor which she had had removed was very likely an adenocarcinoma of the ovary, one of those malignant growths of the ovary which, after they have broken through the ovary, disseminate all through the abdominal cavity. So that there was every reason for subsequent obstruction, mild obstruction, intermittent obstruction, possibly due to adhesions, to volvulus or to the recurrence of new growth. I should think that the most likely diagnosis was partial obstruction of the small intestine as a result of the conditions which were found at the previous operation.

DR. TRACY B. MALLORY Dr. Meigs will you tell us about your findings?

DR. JOE V. MEIGS This patient had an adenocarcinoma of the ovary, operated on two years and a half ago. She had intermittent attacks of colic-like pain and was studied at this hospital by Dr. Chester Jones, who made a diagnosis of intestinal obstruction involving the small intestine. We did not know what it was due to, there were no physical findings, and the only symptom was occasional colicky pain. When the attacks became more frequent we decided to operate upon her. At operation a tumor of the small intestine was found nine inches from the cecum. The tumor was for the most part submucosal, practically occluding the small intestine, but I believe it probably came in from the outside. We did a resection of the intestine and an anastomosis. She had a stormy convalescence but is finally out of bed and doing very well. She had no adhesions in the ab-

dominal cavity, and no evidence of tumor anywhere except in the small intestine.

#### DR. LINCOLN DAVIS'S DIAGNOSES

Adenocarcinoma of the ovary  
Intestinal obstruction

#### PATHOLOGIC DIAGNOSES

First Operation Papillary cystadenocarcinoma of the ovary with invasion to the appendix

Second Operation Metastatic papillary adenocarcinoma of the ileum.

#### PATHOLOGIC DISCUSSION

DR. MALLORY The specimen which was removed at the first operation was a very large papillary cystadenoma of the ovary. These cysts, with multiple papillary masses sticking into them, we always regard as potentially malignant. In this case, however, histologic examination showed it to be quite rapidly growing with numerous mitotic figures and there could be no doubt whatever that it represented established malignancy. Following the first operation she had fairly extensive x-ray treatment, and that is of some interest because certain of these papillary adenocarcinomas of the ovaries are among the group of cancer cases that are most effectively treated by x-ray. In this case, although at the first operation widespread adhesions were present, at the second operation, as Dr. Meigs has told you, only a single tumor nodule was found and that seemed to be actually within the ileum rather than on its outer surface. Interestingly enough it seemed to be at the exact spot where it was noted at the first operation that the intestinal wall was injured in attempting to dig out the primary tumor. From the gross appearance of the intestine at the second operation it would have been impossible to say that it was not a primary carcinoma of the small intestine although such tumors, of course, are extremely rare. The microscopic sections, however, show very clearly that it is the same type of tumor that was present in the ovary. The first slide is from the primary tumor in the ovary. You can see the large cystic areas with the multiple papillary processes sticking into them. It is a very characteristic type of growth that is approximated in only a few other organs in the body. One might find tumors in the thyroid practically indistinguishable from this and rarely one sees them in the kidney. Primary tumors of the intestinal tract never have a structure similar to this. Here is the section from the resected ileum at the second operation. There is normal mucosa. Then as we go along, the mucosa suddenly becomes replaced by tumor and that tumor has exactly the same characteristics as the original ovarian tumor, so I

think there is no question that we are dealing with a recurrent tumor which arose from a definite implantation at the time of the first operation.

Would you care to hazard a prognosis as to the ultimate outcome in this patient?

DR MEIGS Inside the abdominal cavity now there is absolutely no evidence of disease grossly, no lymph nodes, no adhesions, nothing in the mesentery or in the intestines I should think her prognosis was good.

DR MALLORY We certainly have had an occasional case in this group of papillary ovarian cysts that has shown very striking and long con-

tinued improvement following x-ray treatment DR DAVIS Do you remember the Hodenpyle serum?

DR MEIGS Yes, it was made from cyst fluid It is interesting because when we looked up the tumors of the ovary in the hospital and tabulated them, I think there were about 150, we found that the group of tumors that did best after operation were the ones that had the cysts ruptured at the operation This would be, of course, very heretical teaching, but it falls in line with the serum that Hodenpyle advocated He advocated treating the patient with the fluid of these tumors

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PROGRESS IN THE FIELD OF GASTRIC PHYSIOLOGY

REMARKABLE progress in our knowledge of the physiology of the stomach has occurred in the last seven years. The advance was initiated by the original investigations of a Boston worker, Dr. William B. Castle. In 1928 Dr. Castle announced the revolutionary discovery which linked the stomach with the bone marrow and gave a simple physiological explanation for the etiology of pernicious anemia. Subsequent research by Dr. Castle and his co-workers established the fact that the stomach secretes a factor probably an enzyme, which reacts with certain constituents of the food closely associated with vitamin B<sub>12</sub> (G), to form material necessary for normal blood formation. In pernicious anemia this "intrinsic factor" is absent or greatly diminished and a conditioned deficiency disease exists in spite of an adequate diet containing the necessary "extrinsic factor." The "intrinsic factor" was shown to

be absent in saliva and in the duodenal secretion. It was dissociated from pepsin, hydrochloric acid and rennin. It reacted with the "extrinsic factor" at neutrality and was ther molabile.

Knowledge was further advanced by the work of Sturgis and Isaacs, who showed that whole pig stomach was a potent source of material effective in alleviating pernicious anemia. It is believed that the "intrinsic factor" present in the mucose of the pig's stomach reacts with the "extrinsic factor" present in the preparations to form the active principle.

Recently Meulengracht and his coworkers in Copenhagen<sup>1, 2</sup> have added anatomical knowledge to this subject. They have demonstrated that topographically, the glands of the cardia, fundus and pylorus are remarkably well separated in the pig's stomach, which is very similar in this respect to the human stomach. Pepsin, hydrochloric acid and rennin were secreted chiefly by the fundus glands. Preparations from the whole wall of the pig's pylorus, however, were active in pernicious anemia, whereas preparations from the fundus were inactive. The activity of preparations from the cardia is still uncertain. Failure to take into consideration the anatomical distribution of the different types of glands has resulted in the contradictory and uncertain findings of previous workers in this field.

A practical corollary of the recent investigations is that the presence of the stomach, in particular the pyloric region of the stomach is necessary to health, and that, when subtotal gastrectomy is performed, it would be wise to leave the pyloric glands intact.

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HOUSE BILL 756

ONE of the important bills before the Massachusetts Legislature this year, House 756 imposes a definite responsibility on the people of the Commonwealth because of its significance as a public health measure. It is designed to provide an approved quality of service by the medical profession through an amendment to existing laws governing the registration of physicians.

The Board of Registration in Medicine is now obliged to examine all applicants for licensure as physicians, who have had a premedical education equivalent to that required for graduation from a high school, and who are graduates of a chartered medical school which gives a full four years' course of instruction of thirty-two weeks in each year. The specified premedical experience is so indefinite that the adequacy of the intellectual preparation for study of the many scientific fields included in medicine is open to question. The specified requirement of graduation from a medical school which exists in the present law is also lacking in important particulars, because a school would simply have to show that its doors were open for thirty-two weeks of a full four years' course, and that exercises were continuously carried on for these periods. As to the scope or quality of instruction, no state official has any power to determine whether a given school is worthy of recognition according to generally accepted standards. All states of the Union, except Massachusetts, have been engaged in requiring medical schools to raise the quality of curricula or retire from the field.

For many years petitions have been presented to our legislature for changes, in conformity with those taking place throughout the Union, which would give to the Massachusetts Board of Registration in Medicine authority to accept for examination graduates of approved medical schools only. Hitherto this authority has been withheld, and the graduates of any school with the elementary requirements now in force must be recognized by the Massachusetts Board. Even a cult which teaches medicine for the time specified in the law, stands on an equal footing with the highest grade medical schools, so far as the state is concerned.

Massachusetts has seemed to be quite indifferent, respecting the quality of medical practice within her borders, and unconcerned about her standing with the other states. These attitudes are disconcerting, for with the advances in medicine every state should be keenly alive to the wisdom of having the people provided with the best possible preventive and therapeutic resources. The refusal of other states to enter into reciprocal recognition with the Massachusetts Board of Registration is irritating, to say the least. Even though these matters have been repeatedly explained, support of the effort of the Committee on Legislation by the medical profession has been meager.

If the five thousand members of the Massachusetts Medical Society would engage in a wide and well-planned educational campaign designed to reach the intelligent groups, the legislature would, we believe, give to the proper officials authority to demand of medical schools stand-

aids of education approved by the Council on Medical Education and Hospitals. The humiliating situation can only be relieved by the legislature.

The hearing on bill 756 will be held March 7, Room 480, State House, Boston at 10:30 A.M., before the Committee on Education. Meantime, see your Representative and Senator and get others to assist. Attend the hearing if possible.

### THE REGISTRATION OF CHIROPRACTORS

A PETITION for the registration of chiropractors (House 1157) is before the Massachusetts legislature, and the Committee on Public Health will conduct a hearing on this appeal March 7 at the State House. This Commonwealth through its legislature, and its people by a referendum, have heretofore declined to recognize this cult.

The wish to secure recognition of this cult in Massachusetts is so insistent on the part of these practitioners, that this new attempt must be met by an appeal to the intelligence of the legislators. This must be directed by the medical profession, and the attitude of the great majority who voted against recognition of these practitioners must be emphasized at the hearing. The claims of chiropractors for efficiency in dealing with diseased conditions have been analyzed by physicians and found wanting.

Massachusetts has adopted the policy of insisting that all who practice the healing art must meet common requirements which are, in substance, graduation from a chartered medical school which gives a full four years' course of instruction of thirty-two weeks in each year, and also passing the examinations of the Board of Registration in Medicine.

We have not been informed of the existence of a chiropractic school which meets these requirements, and the only way for these people to secure registration under present conditions is to have a board in sympathy with their wishes. Chiropractors practice medicine, and should be possessed of sufficient knowledge to meet the problems of disease. Diagnosis is the essential factor in dealing with disease, and requires a well-trained mind and ability to use and interpret the many technical and scientific demonstrations by which one may know what is taking place in the human body, but chiropractors claim to depend very largely on palpation of the spine for indications of treatment.

Medicine is dedicated to the cure and prevention of disease and must, logically, endeavor to protect the people against incompetence in every form. If physicians perform their duty, men of influence must be present at the hearing, March 7, to show the Committee the right course to pursue in dealing with this petition.

## THE RECOGNITION OF MAGNETIC HEALERS

ARSENÉ J. PARS is the petitioner for the establishment of a board of examination and registration to regulate the practice of magnetic healers as appears in House Bill 1458. This has been assigned to the Committee on State Administration and the hearing will be held March 8 (Room 423, State House at 10:00 A.M.)

Under the original Act creating the Board of Registration in Medicine, magnetic healers were exempted from the operation of the law except that the practitioners of the exempted classes may not practice or attempt to practice medicine. This bill confers the right to practice medicine.

Magnetic healing has never occupied a prominent position in the healing art in this section. According to the bill, members of the board must be "gifted with magnetic healing" and an applicant for registration must be "capable of examining nerve conditions by his magnetic power." The examination of applicants for registration "shall include the subject of nerves." Registered magnetic healers shall comply with the rules and regulations governing the reporting of contagious diseases and deaths. Magnetic healing is defined in this bill as the science of reviving and producing life and circulation in the nerve system and cells, so as to heal all nerve affections." In the first instance the Governor must, in the selection of members of this board of examiners in magnetic healing determine whether such appointees are "gifted with magnetic healing." Even with his recognized ability the acumen of His Excellency will be put to a severe test. A definite danger to the public health policies of the State exists in giving to any person, not a physician, the responsibility of dealing with communicable diseases and reporting of deaths.

The definition of magnetic healing in this bill is extremely vague and carries the assumption that practitioners of this cult have an ability beyond that of physicians.

With the concentration of well-equipped minds on the best methods of treating disease there seems to be no likelihood that magnetic healing will contribute any better methods of relieving suffering than those now used by the medical profession.

This is another vicious attempt, on the part of untrained practitioners, to invade the field of medical practice.

The legislature ought to give the petitioner leave to withdraw his bill.

*Doctors should be present at this hearing*

## THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

WAITE, J. HERBERT M.D. Harvard University Medical School 1916 Clinical Professor of

Ophthalmology, Harvard University Medical School. Ophthalmologist, New England Deaconess Hospital Address 7 Bay State Road, Boston, Mass. Associated with him is

BEETHAM, WILLIAM P. M.D. Harvard University Medical School 1926 Assistant in Ophthalmology, Harvard Medical School Assistant Surgeon, Massachusetts Eye and Ear Infirmary Ophthalmologist to the New England Deaconess Hospital, New England Baptist Hospital, Boston Lying In Hospital and Lakeville State Tuberculosis Sanatorium Address 7 Bay State Road, Boston, Mass. Their subject is "The Visual Mechanism in Diabetes Melitus" Page 367

FLOYD, CLEVELAND M.D. Harvard University Medical School 1903 Physician in Chief, Boston Health Department, Division of Tuberculosis Consultant, Boston Lying In Hospital. His subject is "Pulmonary Tuberculosis and Pregnancy" Page 379 Address 246 Marlborough Street, Boston, Mass

SCHALL, LEROY A. M.D. Jefferson Medical College of Philadelphia 1917 F.A.C.S. Instructor in Laryngology Harvard University Medical School. Associate Surgeon, Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital Assistant Laryngologist, Colis P Huntington Memorial, Palmer Memorial and Robert Breck Brigham Hospitals. His subject is "A Modified Tracheotomy Tube." Page 386 Address 270 Commonwealth Avenue, Boston, Mass

EPSTEIN, ALBERT A. B.S., M.D. New York University and Bellevue Hospital Medical College 1905 Attending Physician Beth Israel Hospital and Hospital for Joint Diseases, New York City. His subject is "The Nephritides." Page 387 Address 70 East 83rd Street, New York City

## The Massachusetts Medical Society

### SECTION OF OBSTETRICS AND GYNECOLOGY\*

THOMAS ALMY, M.D.,  
Chairman,  
140 Rock Street,  
Fall River Mass.

C J KICKHAM M.D.,  
Secretary  
521 Commonwealth Avenue  
Boston, Mass.

### TREATMENT OF TOXEMIAS OF LATE PREGNANCY

The only absolute cure of toxemia of pregnancy is the removal of the fetus from the mother's body. As not all toxemias are equally severe, however, and some apparent toxemias are in reality true nephritis, there is a definite place for medical treatment.

A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

Consideration of the treatment of toxemias may be considered under the headings of prophylaxis, toxemic stage and eclampsia

Prophylaxis implies adequate prenatal care, with advice as to diet, exercise and proper elimination. Routine antepartum examinations, at biweekly intervals during the last trimester of pregnancy, should detect the majority of toxemias in their incipient stage, although occasional fulminating cases will occur.

*Toxemic stage* When a blood pressure of over 140/80 or more than a very slight trace of albumin is detected, immediate hospitalization of the patient is called for. Rest in bed, low protein, salt free diet, mild catharsis, and sufficient sedatives are necessary. Fluids should be forced unless there is marked edema. Four hour blood pressures and daily urinalyses are essential.

Mention must be made of the so called "dehydration treatment", which limits the amount of fluid intake to the amount of urinary excretion. Sufficient trial of this method has not yet been made for a proper evaluation.

Plasmapheresis, washing the blood corpuscles free from toxines in the serum, is too complicated for use except in specially equipped hospitals.

The use of magnesium sulphate intravenously has been extensively advocated. Its proponents claim not only the sedative effect of the salt on the nervous system, but that it also causes resorption of fluid from the tissues into the circulation, resulting in increased elimination. Twenty cc of a ten per cent solution may be given and repeated at six to eight hour intervals.

So long as blood pressure does not rise or the albumin increase in amount, medical treatment may be continued. A rise in systolic blood pressure to 160 degrees or the increase of albumin to 1/4 of 1 per cent, severe headache, blurring of vision or epigastric pain demand termination of the pregnancy. The method to be employed should depend upon the mechanical conditions present.

In a multipara with previous normal labors, or in a primipara under thirty with good pelvic measurements where no mechanical difficulty in delivery is to be expected, artificial rupture of the membranes, with or without the insertion of a bougie (a sterile rectal tube makes an excellent bougie) is usually sufficient. The Voorhees bag may be used, but is accompanied by an increased risk of infection. Labor having been induced, the patient should be kept well under the influence of barbiturates and a "hands off" policy maintained with regard to operative interference and anesthesia.

In a primipara over thirty with an unengaged presenting part and a long undilated cervix, and especially if the pelvic measurements are contracted, a long labor and difficult delivery

may be anticipated. In these patients, cesarean is usually the method of choice. Theoretically, either local or spinal anesthesia should be ideal in these cases. The dangers of spinal anesthesia in cesarean, and especially with hypertension, and the general unsatisfactoriness of local anesthesia, make well-given gas-oxygen safer in the long run.

The after-treatment consists chiefly in resuming the previous medical treatment. Fluids may be given by mouth, hypodermoclysis or intravenously. Only water, fruit juices and milk should be given by mouth during the first seventy-two hours.

*Eclampsia* The majority of obstetricians now favor some modification of the Stroganoff régime with or without induction of labor. Cesarean section should not be done except in the presence of a definite mechanical indication.

The original Stroganoff method consisted in putting the patient to bed in a darkened room, plugging the ears and avoiding handling as much as possible. Morphia, gr 1/4 on entrance and repeated three hours later. One hour after entrance chloral hydrate grs xxx by rectum and repeated every six hours until convulsions cease.

Because of the depressing effect of morphia and chloral, many obstetricians now favor the use of barbiturates. Sodium amyta, grs xv may be given by mouth, or if unconscious by rectum, and repeated in grs vi doses as often as necessary to keep the patient well narcotized. The narcosis is continued until after convulsions cease. If there is acidosis, 500 cc of ten per cent glucose should be given intravenously, accompanied by thirty units of insulin. As the patient improves, the same medical treatment already laid down for toxemias should be followed.

## MASSACHUSETTS LEGISLATIVE NOTES

### THE BILLS RELATING TO VACCINATION

House bill 60, which was the subject of a hearing before the Committee on Public Health February 19, was ably supported by the Department of Public Health, by Dr S B Woodward, the Massachusetts Medical Society as represented by the President, Dr Robey, and the Treasurer, Dr Butler, Dr M J Rosenau of the Harvard Medical School, and Dr C M Hilliard, Professor of Biology and Public Health, of Simmons College.

Two members of the legislature also advocated the passage of this bill which is designed to extend the requirements of vaccination to pupils in the private schools of this Commonwealth. Mrs Henderson again headed the opposition to this measure by arguments against the invasion of the person in the use of an alleged dangerous vaccine, and by assertions that a large number of deaths and serious disabilities

ties are caused by this procedure. She presented several witnesses who reported deaths and serious illness alleged to be due to vaccination.

In addition to quotations from many people who are opposed to vaccination, she made use of the Fitchburg epidemic in support of her arguments and made statements which were shown to be false by Dr. Chadwick, Commissioner of Health. She apparently believed that any illness following vaccination must be the result of this treatment. Her address seemed to tire the Committee but she was persistent in repetitions and sensational illustration of her beliefs and was permitted to consume a large part of the time.

She championed the opposition bills, House 623 designed to eliminate all of the vaccination requirements, and House 755 which requires that physicians guarantee the purity of the virus to be used. All of her arguments were combated effectively.

The most encouraging feature of the hearing was the comparatively small attendance of the opponents of compulsory vaccination.

As we go to press notification has been received that the following bills have been given leave to withdraw:

H 623. Bill making vaccination voluntary.

H 755. Bill to prevent vaccination or inoculation with impure virus or serum without consent.

The following bill has been reported favorably in House. Referred to Ways and Means.

H 758. Resolve providing for an investigation by a special unpaid commission of the Public Health laws and practices of Public Health in the Commonwealth.

#### SCHEDULE OF HEARINGS

**Thursday March 7 at 10 30 A.M.** in Room 480 State House before the Committee on Education

**H 756**—A petition of the Massachusetts Medical Society for legislation relative to the qualifications of applicants for registration as physicians.

*Approved by the Committee on State and National Legislation of the Massachusetts Medical Society*

**Thursday March 7 at 10 30 A.M.** in Room 450 State House before the Committee on Public Health

**H 1157**—A petition of Henry J. Kennedy for establishment of a board of examination and registration to regulate the practice of chiropractic.

*Opposed by the Committee.*

**Friday March 8, at 10 00 A.M.** in Room 4-3 State House before the Committee on State Administration.

**H 1458**—A bill to create a board of examination and registration to regulate the practice of magnetic healers.

*Opposed by the Committee.*

#### MISCELLANY

#### NOMINATIONS BY THE GOVERNOR

His Excellency Governor Curley has nominated three trustees of the Massachusetts General Hospital for consideration of the Executive Council. They are Mr. Joseph A. Tomasello, Treasurer of the Democratic State Committee; Mr. Edward A. Flene, a business executive, who has shown interest in sociology; and Mr. Henry V. Morgan, Treasurer of the Boston Bridge Works Inc.

These nominations will, if approved by the Council, take the places vacated by Mr. Edwin S. Webster, former Mayor Andrew J. Peters and Mr. Joseph H. O'Neill who died recently. Miss Dumaine of Groton was reappointed a trustee of the Hospital.

Other appointments by the Governor of interest to the medical profession, are Eva M. Watson, trustee of the Medfield State Hospital; Edna W. Dreyfus, reappointed trustee of the Boston State Hospital, and Rose Herbert, trustee of the Grafton State Hospital.

#### THE APPOINTMENTS OF THE DEAN OF THE HARVARD MEDICAL SCHOOL, AND DEAN OF THE SCHOOL OF PUBLIC HEALTH

The Board of Overseers of Harvard University has approved the appointment of Professor Charles Sidney Burwell as Dean of the Harvard Medical School and also that of Professor Cecil Kent Drinker as Dean of the School of Public Health.

Dr. Burwell was born in 1893 and graduated in medicine from the Harvard Medical School in 1919. He is Professor of Medicine at the Medical School of Vanderbilt University, Nashville, Tenn. He will fill the position made vacant by the resignation of Dean David L. Edsall.

Dr. Drinker was instructor in physiology at the Harvard School from 1916 to 1918 and has been Professor of Physiology since then. He has also served as Assistant Dean of the School of Public Health.

#### CORRESPONDENCE

##### HOUSE BILL 340 AND ITS DANGERS

Editor *New England Journal of Medicine*,

House Bill 340 proposes in effect to exclude insurance companies from any function in the administration of the Workmen's Compensation Act and to substitute a monopolistic "State Fund." Passage of this bill as it stands would be a calamity.

One of the greatest benefits to the workman under the Compensation Act is the assurance of proper medical care. After all, if a workman gets seriously smashed up, it is the surgeon and the surgeon alone who may make him whole. And if for any reason he fails to get proper surgical treatment he falls into bad luck which no 500 weeks of compensation can make up to him.

Many years ago some few surgeons interested themselves in the problems of repair of those crippled in industry. At first there was no compensa-

tion—no compensation for the surgeon, certainly, and no way of assuring proper hospital treatment and care in convalescence. But some of us kept at it as best we could.

Then came the Workmen's Compensation law and oddly enough (just as in the proposal now under consideration) the first draft entirely neglected the whole medical problem. This is almost unbelievable, but true.

Very soon the late Judge James Carroll, father of the law, appreciated the situation and acted.

The writer happened to be the man he selected to arrange for open meetings at the State House to get the doctors into line and to head a committee of medical men to act as medical advisers to the board.

This committee served (unpaid) for years and did a great deal of work. Almost all of the changes in the law by later amendment, that concerned medical matters, originated with this committee, and almost all of the forms of medical procedure were from the same source.

The writer worked in the early days and ever since with the board, with the insurance companies and against them, and devoted much professional effort at the City Hospital, in the army before and after the war, and in private practice to what we now call bone and joint surgery and the surgery of reconstruction, with not inconsiderable contributions to new techniques and methods, and to the testing and use of known ways of treatment.

So some have seen the game through up to the present time.

And for twenty years and more it has been a matter of education of insurers and employees—and the board—of slow working out of methods of cooperation of the board, the insurers and the doctors, in order to get results.

And we have gotten results.

So that to day the injured workman is assured of competent treatment, and of especially expert treatment when that is needed.

The best surgeons have found it possible to cooperate in this accomplishment.

How wide the cooperation has been, appears from the list of eleven hundred doctors in Massachusetts that have been paid by one company.

And the results compare most favorably with those of any state—are better, we think, than those under state fund administration.

It would be a great pity to waste all this painfully won accomplishment of years.

And, make no mistake, if the insurance companies are excluded from the operation of this act, the whole thing is scrapped, and we go back to a medical chaos like that of 1913, to work the scheme out again, and likely enough to work it out worse instead of better than we now have it, to say nothing of the long complicated mess of the readjustment period.

And what is there to be gained?

A case might perhaps be made out for a competitive state fund, but not for a monopolistic one, in

the opinion of very many of the medical profession.

Those who know the situation best, those who view it most broadly, who see it in terms of salvage of human efficiency, of return of the damaged workman to his previous self, who believe that the doctor's best service is the best recompense the workman can have, are concerned over a situation that seems to jeopardize what has been so hardly won.

No human thing is perfect or beyond improvement, but this bill as it stands should not pass.

Every doctor should try and bring about an understanding by his legal representatives that the medical profession is against it, not only in the interest of the doctor, but even more in the interest of the injured man whom we try to restore to health.

F J COTTON, M.D.

#### DID THE MODEL FOR LEONARDO'S "MONA LISA" HAVE A LEFT SUPRA-ORBITAL DERMOID?

*Mr Editor*

In studying a reproduction from a copy of this most celebrated of portraits, your correspondent has been struck with the appearance just above the left fronto-temporal angle of the portrait.

If one observes this spot carefully, one gets the effect through the shading, of a small soft oval, somewhat ill defined swelling just above and to the outer side of the left eyebrow, extending to the junction of the hair line. It suggests a small dermoid cyst at this site.

Perhaps some of your readers, interested in art, after looking at a copy of the picture with this in mind, may be reminded of certain similar cases they have seen or operated upon.

Very truly yours,

WILLIAM PEARCE COUES, M.D.

#### AN EXPLANATION OF THE DOSAGE OF DILAUDID COMPOUND TABLETS

February 20, 1935

*Editor, New England Journal of Medicine,*

Our attention has been called to page 316 in the February 14 issue of the *Journal*, on which is reprinted a letter from Dr Paul Nicholas Leech, Secretary of the Council on Pharmacy and Chemistry of the A. M. A., listing products recently accepted. This list includes a dosage form of Dilaudid which is here given as "Dilaudid Compound Tablets  $\frac{1}{2}$  grain."

We believe that this listing is likely to cause some confusion in prescribing Dilaudid, since these tablets are not a mixture of Dilaudid with other drugs, but a Compounding tablet used to facilitate the preparation of prescriptions. Frequently, Dilaudid is prescribed in the proportion of  $\frac{1}{2}$  grain in 4 ounces of vehicle and then given in teaspoonful doses, each of which contains  $1/64$  grain.

We should like to correct any impression that Dilaudid can ordinarily be given in  $\frac{1}{2}$  grain doses. A  $\frac{1}{2}$  grain dose of Dilaudid is considered as equivalent

to 2½ grains of morphine, and this would be likely to cause depressive symptoms in a patient who has not developed a tolerance to opiates.

We have taken every precaution to prevent these tablets from being dispensed as such and have labeled them "Dilaudid Compounding Tablets ½ grain for compounding only. Do not dispense."

We trust that you understand our position in this matter and hope that you can call the attention of your readers to the correct use of Dilaudid Compounding Tablets so that any accident which might result from the administration of such a large dose may be prevented.

Very truly yours,

BILHUBER-KNOLL CORP.  
F. B. WESTERN M.D.

154 Ogden Avenue,  
Jersey City N.J.

#### DOCTORS DEALINGS WITH LAWYERS

The Law Society of Massachusetts

February 18 1935

Editor *New England Journal of Medicine*

A communication in your issue of February 7 1935 from Dr W A Hutton has been called to my attention.

The subject of the doctor's dealings with lawyers in accident cases was dealt with by me in an address delivered at the Phi Delta Epsilon Fraternity recently. I made a fairly careful study of the situation and, for their future guidance, drew a sample letter which I distributed to the doctors attending this meeting.

If I may be permitted an opinion, I would like to say that Dr Hutton is a little too hard on the lawyers generally and his statement on the law with regard to a doctor's right to collect for appearing as a witness is erroneous.

I have done business with hundreds of physicians during the time I have been in practice and have never yet found it necessary to have more than a friendly talk with a physician when the fund available was not large enough to pay his entire bill, and my entire fee. A personal friendly talk, it is suggested, is all that is necessary for men of two honorable professions to adjust their differences to their mutual satisfaction.

If the Medical Societies would invite the officers or a representative of the County or City Bar Association to come before their Body and explain to them their full rights and give them a form letter to guide them in their dealings the medical men would do themselves a service, encourage friendship between our respective noble professions, and make unnecessary the acrimonious epistles of Dr Hutton and others.

If you deem it advisable you have my permission to set out the form letter and the citation of authorities which I have annexed hereto for the benefit of your readers and let me say as an officer of the Law Society of Massachusetts that our organization stands for mutual aid and co-operation between the

medical and legal professions and would censure most severely any lawyer against whom a just complaint by a doctor could be proved.

Very respectfully yours,

JOSEPH SCHNEIDER,

Secretary of The Law Society  
of Massachusetts

#### SAMPLE LETTER

Dear Lawyer

I am treating your client and my patient John Jones for the injuries sustained by him in the accident of June 1, 1934 at Summer and Washington Streets Boston. I am willing to attend Court without summons if you will give me an adequate telephone notice in advance of the time you may call me. Mr Jones has agreed that he is to pay me in any event for all professional services rendered no matter what the outcome of his claim for damages may be, but that if any moneys come into your possession on account of his injuries and he has not yet paid me you are to retain and forward to me sufficient to pay the charges for my medical services and a reasonable fee in addition for my Court attendance as an expert if I am called to testify.

I would appreciate an acknowledgment for my file of your assent to this arrangement. Kindly advise me in what Court you start suit and the status of the case from time to time, and oblige.

Very respectfully yours,  
(Doctor.)

Dear Lawyer

The foregoing which I have read is agreeable to me and you are authorized to pay in my behalf in accordance with the above understanding.

(PATIENT-CLIENT)

#### Reference

1. Lawyer has no right to pay doctor unless authorized.

Falardeau v Washburn, 199 Mass. 363

2. Doctor has no right to be paid for Court attendance unless there is an express agreement to pay and he comes without summons or he is called as an expert.

Barrus v Phaneuf, 166 Mass. 123

Keown & McEvoy Inc. v Verlin, 253 Mass. 377

3. An agreement to share in the fruits of the litigation or take a percentage thereof or to look only to the outcome of the litigation for payment of a doctor's bill is void as against public policy.

Weinberg v Magid, 1934 Mass. Ad. Sh. Page 155

#### RECENT DEATHS

KARCHER—EDWARD WINSLOW KARCHER, M.D., of Lynn Massachusetts with an office at 416 Marlborough Street, Boston, died at his home February 18 1935. He was born in Newton Centre Massachusetts, in 1882 and graduated in medicine from the Middlesex College of Medicine and Surgery in 1916.

He was a Fellow of the Massachusetts Medical

Society and the American Medical Association, and a member of the Tedesco Club

His widow, Mrs Ada (Quincy) Karcher, three sisters and a brother survive him

**SIMPSON** — JAMES EDWIN SIMPSON, M.D., of 26 Chestnut Street, Salem, Massachusetts, died in that city, January 19, 1935. He was born in 1869, and graduated from the Harvard Medical School in 1891.

He was a Fellow of the Massachusetts Medical Society and the American Medical Association.

**WHITNEY** — EDWARD WILLIAM WHITNEY, M.D., Superintendent of the Northampton State Hospital, died February 16, 1935. Previous to his appointment as Superintendent in 1933, he had served the hospital for twenty five years as assistant physician and twice as acting Superintendent. He was also Assistant to the Commissioner of Mental Diseases of Massachusetts.

Dr Whitney was born in Putnam, Conn., in 1879, and graduated from the Harvard Medical School in 1903 and was an interne at the Boston City Hospital

He was a Fellow of the Massachusetts Medical Society, the American Medical Association, and a member of the Massachusetts Psychiatric Society, the American Psychiatric Society, and the New England Psychiatric Society.

His widow, Dr Harriet Wiley Whitney, assistant physician at the Northampton Hospital, survives him

**BRAGDON** — HORACE ELWOOD BRAGDON, M.D., of 77 Bartlett Road, Winthrop, and former head of the Chelsea Memorial Hospital, died at his home, February 17, 1935. He was born in East Boston in 1867, the son of Captain Byron F. and Angie Elwood Bragdon.

After graduating from the Harvard Medical School in 1891 he served as interne at the Boston City Hospital and later studied in Vienna. He was a Fellow of the Massachusetts Medical Society and the American Medical Association and a member of the Harvard Club, Temple Lodge of Masons and Zenith Lodge of Odd Fellows.

He was Vice President of the Sumner Savings Bank, Director of the Columbia Trust Company and the Enterprise Coöperative Bank.

His daughter, Mrs John Gore, of Canajoharie, N.Y., and two grandchildren survive him.

**BRADFORD** — CARY CARPENTER BRADFORD, M.D., of Southbridge, Mass., died at Woodstock, Conn., October 20, 1934. He was born in 1855, graduated from the Harvard Medical School in 1882 and was a former Fellow of the Massachusetts Medical Society. He retired from practice several years ago.

## NOTICES

### REMOVAL

WILLIAM D. ROWLAND, M.D., announces the removal of his office to 84 Commonwealth Avenue, Boston.

## CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 PM on Thursday, March 7, in the Amphitheatre of the Peter Bent Brigham Hospital, Dr Henry A. Christian, Physician-in-Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic. To it are cordially invited practitioners and medical students. These clinics will be repeated on Thursdays until May.

On Saturdays in the wards of the Peter Bent Brigham Hospital, from 10 to 12, staff rounds will be conducted by Dr Christian. These are open to all physicians.

## BOSTON UNIVERSITY SCHOOL OF MEDICINE SURGICAL CLINIC AT THE BOSTON CITY HOSPITAL

Friday, March 1, 12-1, Cheever Amphitheatre Dr Augustus Riley, Assistant Professor of Genito-Urinary Surgery, Harvard Medical School, and Visiting Surgeon, Boston City Hospital, will discuss "Surgical Lesions of the Genito Urinary Tract." Physicians and medical students are invited.

## REPORTS AND NOTICES OF MEETINGS

### SUFFOLK DISTRICT MEDICAL SOCIETY

A joint meeting of the Suffolk District Medical Society and the Boston Medical Library was held at the Boston Medical Library on the evening of January 23. Dr Chester S. Keefer was the first speaker and discussed "The Differential Diagnosis of Degenerative Arthritis." The term "degenerative arthritis" is synonymous with hypertrophic arthritis, osteo-arthritis, and arthritis deformans. The pathological picture of this condition consists of a fibrillation of the cartilage, compression of the underlying subchondral tissue, a loss of cartilage with an attempt at repair and the formation of exostoses. In the spine there is a disorganization of the discs with prolapse and compression with exostosis formation. Degenerative changes in the joints normally increase with age and tend to appear in the following order: knee, acromioclavicular joint, elbow, hip, metatarsal, and spine. The chief predisposing or accelerating factors are first, advancing age, secondly, certain occupations as the use of compressed air hammers, thirdly, gross trauma as a fracture involving the joint surface, fourthly, postural defects, fifthly, excessive weight, sixthly, previous damage by infection, especially typhoid of the hip, and seventhly, the loss of pain and position sense. Dr Keefer then considered in detail the special accelerating factors in each of several joints.

In discussing special forms of degenerative arthritides, Dr Keefer first spoke on Charcot's joints which may occur in tabes dorsalis where there is an extreme degenerative change with the loss of pain.

sense. They also occur in syringomyelia and in certain peripheral nerve diseases. In hemophilia, trauma causes hemorrhage into the joint and into the bone which leads to marked degeneration and cystic formation within the cancellous bone. There is probably no relation between arthritis and alkaphtonuria.

Degenerative arthritis must be differentiated from diseases in the neighboring bone functional conditions such as strain, and new processes superimposed upon the arthritis. As for diseases that may occur in the neighboring bone, one must exclude in the case of the spine Marie-Strümpell's disease which rarely occurs after forty years of age Charcot's disease, hyperparathyroidism Paget's disease, cord tumors, posterior dislocation of the intervertebral discs tumors of the vertebrae either primary or secondary infections of the vertebrae, collapse of a vertebra, and aneurysmal destruction of the vertebrae. Conditions which may be superimposed upon degenerative arthritis are infections proliferative joint disease, gout, and rarely tumors. In the spine, the pain may be exaggerated by coughing sneezing, or defecation and often has a radicular distribution. There may be areas of anesthesia and a limitation of motion.

In arthritis of the elbow of this type there are frequently loose bodies which may cause the joint to lock. The knee becomes stiff crepitates on motion and flexion is limited. When the synovial membrane is pinched infarction occurs with a hemorrhagic effusion and loose bodies are formed. In summary degenerative arthritis normally increases with age, often creates lesions that do not cause pain, and when symptoms do arise the condition must be distinguished from neighboring bone lesions or superimposed conditions.

Dr Walter Bauer then spoke on "The Differential Diagnosis of Rheumatoid Arthritis". He presented a simple classification of those cases where the origin is known and where it is unknown. There are several subdivisions of the known origin group chief among which are first, traumatic as in sprains etc. secondly bacterial including the tubercle bacillus, the gonococcus staphylococcus etc. thirdly the neuro-arthropathies (Charcot's) including tabes, syringomyelia, and leprosy fourthly metabolic as gout fifthly constitutional, as hemophilia and hysteria and sixthly anaphylactic as in serum sickness.

In the group where the origin is unknown or uncertain there are degenerative arthritis proliferative arthritis, rheumatic fever and others. Rheumatoid arthritis, synonymous with atrophic and proliferative arthritis is a chronic disease of unknown etiology characterized by relapses. The nature of the onset tends to vary considerably and the periods between relapses become shorter and shorter until the patient assumes a steady downhill course. Dr Bauer stressed the fact that rheumatoid arthritis can affect any age and is quite common past middle age. Constitutional symptoms are usually present,

are often marked, and frequently precede joint symptoms. The small joints are most often affected frequently bilaterally and symmetrically. The first complaint of these patients is sometimes that associated with paresthesias. There is usually marked muscle weakness and there are definite vaso-motor symptoms with cold perspiring extremities. The skin is shiny and atrophic and may have pigmentary changes. The temperature, white count, and sedimentation rate are all increased demonstrating this disease to be a general, constitutional condition.

The joint changes are all secondary to a proliferation of the synovial membrane which extends as a pannus formation into the joint space. This pannus erodes the articular cartilage and causes fibrous tissue ankylosis. Occasionally there is a subchondral proliferation of the connective tissue so that there is destruction of the cartilage from below as well as from above.

Rather than take up all of the conditions with which rheumatoid arthritis may be confused, Dr Bauer chose to consider a few case histories in which mistakes had been made. The first of these concerned a nineteen year old girl who had developed a painful knee joint after a previous upper respiratory infection. This developed into a migratory arthritis requiring opium for the relief of pain. After a positive complement fixation test and the gonococcus had been found in the aspirated joint fluid the diagnosis of gonorrhreal arthritis was made. The features of this case are the onset like rheumatic fever the fact that the complement fixation test gave the first definite clue and it shows the value of diagnostic aspirations.

The second case was also one of gonorrhreal arthritis in a patient where all smears as well as the complement fixation test were negative. The first clue was the admission of the husband that he had been previously infected, and the diagnosis was established when the smear became positive after a provocative dose of gonococcus vaccine. With regard to gonorrhreal arthritis it is necessary to suspect all cases the clinical manifestations may be indistinguishable from those of rheumatoid arthritis it may occur days or years after the infection there may be recurrences and the onset is often acute with chills and a moderate fever. There is a leucocytosis a migratory polyarthritis and it usually affects the large joints. Repeated smears are necessary in the search for the organisms the complement fixation test is valuable, being positive in eighty per cent of the cases diagnostic taps often help provocative doses of vaccine are a distinct aid and x rays must be read with caution because of the rapid bone atrophy. The prognosis is very good there being a sixty to seventy per cent chance of cure.

A nineteen year old boy entered with the diagnosis of rheumatic fever. He gave a history of repeated joint attacks lasting from one to three weeks

Tuesday, March 5—

- 1 30 P.M. Radio Program—WEEI "Typhoid Fever"
- +2 30-4 P.M. Ward visit, Massachusetts Eye and Ear Infirmary
- +4-5 P.M. Seminar, Pediatric Laboratory, Massachusetts General Hospital.
- 4 30 P.M. Radio Program—WBZ "Tired Legs from Altered Circulation."

Thursday, March 7—

- \*12 M. Clinico-Pathological Conference Massachusetts General Hospital
- +12 M. Clinico-Pathological Conference Children's Hospital
- \*3 30 P.M. Medical Clinic Dr Christian Peter Bent Brigham Hospital
- +4 30 P.M. Surgical Clinic. Peter Bent Brigham Hospital
- 5 P.M. Faulkner Hospital Clinical Meeting

Friday, March 8—

- 5 P.M. Radio Program—WEEI Diagnostic Laboratories "Biological Laboratories"
- 8 P.M. William Harvey Society Auditorium, Beth Israel Hospital, Boston

Saturday, March 9—

- \*10-12 Medical Staff Rounds Dr Christian Peter Bent Brigham Hospital.

Sunday, March 10—

- 4 P.M. Harvard University (Medical School Building D, Longwood Avenue Boston.) Free lecture "Twins and Social Biology" Dr G H Parker

\*Open to the medical profession.

+Open to Fellows of the Massachusetts Medical Society

February 28—Massachusetts General Hospital, Clinical Meeting will be held in the Moseley Memorial Building, 8 15-10 P.M.

March 1—Boston University School of Medicine Surgical Clinic at the Boston City Hospital. See page 408

March 7—Clinic at the Peter Bent Brigham Hospital See page 408

March 7—Faulkner Hospital Clinical Meeting See page 411

March 8—William Harvey Society See page 411

March 11, 12, 13—Surgeons to meet in Jacksonville, Florida (Southeastern Surgical Congress) See page 83, issue of January 10

March 12—Harvard Medical Society See page 411.

#### MASSACHUSETTS DIETETIC ASSOCIATION

March 12—Tuesday, 8 P.M. "The Effect of Diet on Anemia," Dr Lewis Diamond Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital

March 19—Tuesday 2 P.M. Field Trip Visit Storehouse First National Stores

April 9—Tuesday, 8 P.M. "Small Hospital Problems" Miss Margaret Copeland, Superintendent, Free Hospital for Women

March 13—Greater Boston Medical Society Postgraduate Clinic Day at Beth Israel Hospital Symposium on Diabetes Mellitus, 9 30 A.M.-12 30 P.M. Luncheon 12 30-1 30 P.M. Symposium on Biliary Tract Diseases, 1 30 P.M.-4 30 P.M. The Annual Dinner-Dance will be held at the Copley-Plaza Hotel. Apply to David B Stearns, M.D., 485 Commonwealth Avenue, Boston, Mass., for particulars

April 23—The Massachusetts Society for Social Hygiene See page 411

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr E R Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester, N.Y. For details, address the Secretary Miss Frances N A Whitman, Librarian Harvard University Schools of Medicine and Public Health, Boston, Mass

June 27-29 inc.—British National Association for the Prevention of Tuberculosis will be held at Southport, England. Persons desiring further information should write to Miss F Stickland Secretary of the Association at Tavistock House North, Tavistock Square, London, W C I, England.

July 22-27—Seventh International Congress on Industrial Accidents and Diseases, Brussels, Belgium. The American Committee of the Congress is under the chairmanship of Dr Fred H. Albee New York, for the Section on Accidents, and that of Dr Emery R Hayhurst, Columbus, Ohio for Industrial Diseases. The American delegation to the Congress will sail from New York on July 8 and visit London, Amsterdam, The Hague and Paris, and, optionally, Budapest. Physicians interested in the Congress or in the medical tour in conjunction with it, may address the Secretary, Dr Richard Kovacs, 1100 Park Avenue, New York City

#### DISTRICT MEDICAL SOCIETIES

##### ESSEX NCRTTH DISTRICT MEDICAL SOCIETY

The Annual Meeting will be held in May Time, place and subject to be announced

E S BAGNALL, M.D., Secretary

##### FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel, Greenfield, Mass.

CHARLES MOLINE, M.D., Secretary

Sunderland

##### MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

March 13—Wakefield

May 8—Winchester

K. L MACLACHLAN, M.D., Secretary

1 Bellevue Street, Melrose

##### MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

March 7—The meeting will be held at noon in the Hotel Continental, Cambridge, Mass

##### NORFOLK DISTRICT MEDICAL SOCIETY

March 26—Fernald School for Feeble-Minded, Waverley Details to be announced

May—Annual Meeting Date, time and place to be announced.

##### PLYMOUTH DISTRICT MEDICAL SOCIETY

March—Plymouth County Hospital.

April—Lakeville Sanatorium

##### SUFFOLK DISTRICT MEDICAL SOCIETY

March 27—Clinical Meeting at the Boston Lying-in Hospital.

April 24—Clinical Meeting at the Children's Hospital.

The medical profession is cordially invited to attend these meetings

ROBERT L DeNORMANDIE, M.D., President

GEORGE P REYNOLDS, M.D., Secretary

##### WORCESTER DISTRICT MEDICAL SOCIETY

March 13—Wednesday evening The Memorial Hospital, Worcester Mass 6 30 P.M. Buffet supper 7 30 P.M. Scientific program and business session Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10—Wednesday evening Worcester Hahnemann Hospital Worcester, Mass 6 30 P.M. Dinner 7 30 P.M. Scientific program and business session Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8—Wednesday afternoon and evening Annual Meeting of the Worcester District Medical Society The time and place of this meeting will be announced later

ERWIN C MILLER, M.D., Secretary

27 Elm Street, Worcester

#### BOOKS RECEIVED FOR REVIEW

A Summary of the Treatment of Fractures and Dislocations R Broomhead 39 pp Leeds Jowett & Sowry, Limited 3/6d

Feeding a Family at Low Cost Statements in this publication have been accepted by the Committee on Foods of the American Medical Association. 16 pp Illinois Evaporated Milk Association

The Crippled and the Disabled Rehabilitation of the physically handicapped in the United States Henry H Kessler 337 pp New York Columbia University Press \$4.00

# The New England Journal of Medicine

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## NEW ENGLAND BRANCH, AMERICAN UROLOGICAL ASSOCIATION

### ECTOPIC TESTIS AS A CAUSE OF URETERAL DILATATION —CASE REPORT\*

BY GEORGE C. PRATHER, M.D.†

WHILE crypt-orchidism in young adults is said to have an incidence of between 1 and .2 per cent<sup>1</sup>, ectopic testis in the true sense of the term occurs much less frequently. Although ectopic testis is due to aberrant migration the cause of aberrant migration is not definitely known. Sebileau and Descomp<sup>2</sup> have given an excellent classification of the various situations in which an ectopic testis has been reported. This is used in Young's<sup>3</sup> Textbook. It is as follows:

#### Aberrant Migrations—

##### 1. Intra abdominal

(a) Pelvic, in which the testis lies in the true bony pelvis adjacent to the posterior lateral surface of the bladder on top of and lateral to the corresponding seminal vesicle. Such a case has been reported by Charpy and DesForges-Marie<sup>4</sup>. In their report there is no mention of the size or course of the ureter in relation to the ductus deferens on the corresponding side. Apparently, however, the ureter was of normal size as it was confused at first with the vas. The seminal vesicles were normal in shape and position. Examination of the fluid from the vas showed no spermatozoa. From the testis apparently led the gubernaculum which followed up to the inguinal canal, through it and down to the scrotum. Microscopically this cord was composed of a number of smooth muscle fibers with abundant arterial blood vessels. It is assumed that the ectopic condition occurred in spite of the usual insertion of the gubernaculum.

(b) Deep crural, signifying a condition in which the testicle emerges through the femoral ring to the crural region.

##### 2. Intra abdominal

(a) Superficial crural in which the testicle is found in the superficial tissues of the femoral triangle.

(b) Cruroscrotal, in which the testicle is found in the cruroscrotal fold.

(c) Pubopenile, in which the testicle is located at the root of the penis.

(d) Penile, case reported by Guermonprez and Poupart<sup>5</sup> in which the testicle was located under the skin of the penis.

(e) Subcutaneous abdominal, the testicle lying under the skin of the anterior wall.

(f) Perineal, in which the testicle is found in the perineum.

(g) Transverse ectopia, in which the testicle is located in the opposite scrotal sac.

The case report which follows is concerned with the first division of the classification in which the testis was located in the true bony pelvis with corresponding change in the length and direction of the vas deferens, so that it constricted the ureter  $\frac{1}{2}$  cm above the bladder wall. In the dissecting room I have found that normally the vas crosses the ureter about 2 cm. from the bladder. Although I have not been able to find such a complication of ectopic testis in the literature, from the manner in which the vas deferens normally crosses the anterior surface of the ureter there would seem to be no anatomical reason why such obstruction could not occur more frequently, especially with any change in direction or tension of the vas.

The patient, Mr. C. M., aged twenty-seven, x-ray technician by occupation married and the father of one child, was seen April 5, 1934 with an immediate history of dull pain in the left flank covering a period of two weeks during which time there had been a temperature of 103° for five days not accompanied by nausea or vomiting. There has been some frequency, no nocturia and slight dysuria.

*Past history.* General health excellent. Four years ago an attack of left flank pain occurred which disappeared spontaneously. Dull in character not studied at that time.

*Physical examination.* Was normal except for the abdomen and external genitalia. Abdominal examination showed a left kidney which was enlarged and easily palpable on inspiration. At the time of examination this was not tender. The right testis was normal in size, location and consistency while the left could not be felt either in the inguinal canal or scrotum or perineum. The prostate on rectal examination was normal in size and consistency. A voided specimen of urine showed no albumin, no sugar but a microscopic sediment was loaded with pus and motile bacilli. Office cystoscopy demonstrated a marked cystitis, a normal right ure-

Presented at the Annual Meeting of the New England Branch of the American Urological Association at Boston, November 5, 1934.

\*Prather, George C.—Assistant Urologist Boston Lying-In Hospital. For record and address of author see "This Week's Issue," page 482.



FIG 1 Roughened and crusted areas on palm of hand



FIG 2 Piled up crusts between the toes and at the base of the toe nails

lesions progress there is a more destructive process to the skin than in psoriasis, and there is a "piling up" of crusts covering the lesions to a much more marked degree than one expects to find in psoriasis. When the lesions begin between the toes it is more likely to be called "Athlete's Foot"

In addition to the skin lesions as shown here by the lantern slides, these three cases had swollen, painful and tender joints

There is a history of a gonorrhreal urethritis with inadequate or no treatment. Prostatic and vesicular secretion obtained by massage of these parts shows much pus. Downing believes that this disease is due entirely to a gonococcal infection, and that the site of this infection is in the prostate and vesicles. Therefore, the best treatment for these cases is surgical eradication of the site, that is vesicectomy and prostatectomy.

Two of these cases have been operated on by me and in both complete vesicectomies were done, with incision and drainage of their prostates. The results were complete relief of their joint symptoms after short intervals and a complete disappearance of the skin lesions after a much longer time.

The third case is now being studied to determine if possible whether the lesions are due to the invasion of the gonococci into the tissues, or the results of some toxins.

These lantern slides were made of the first case operated on, and they show very clearly the

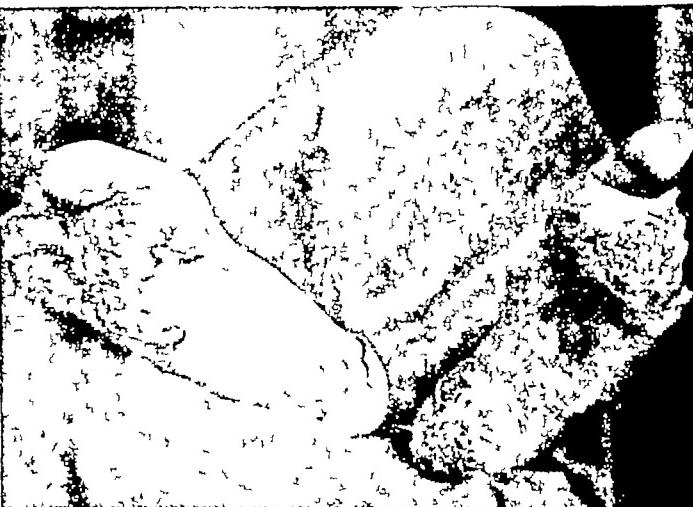


FIG 3 Destructive lesions on soles of feet.

"piling up" of the crust and a destruction of the skin of the soles of the feet. This case had extensive lesions of the whole back, extending from the shoulders down over the buttocks.

#### REFERENCE

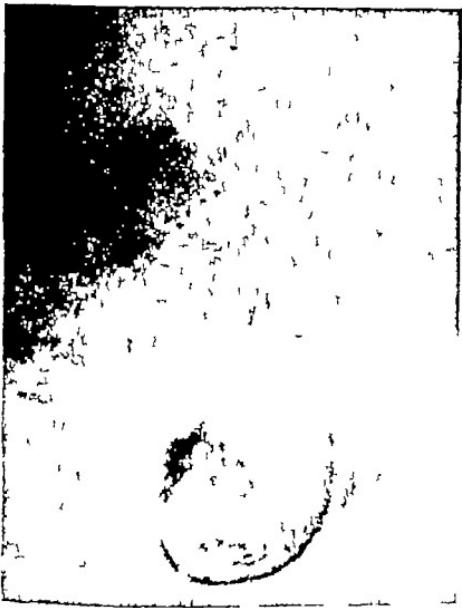
Downing John Godwin. Keratoderma Blennorrhagicum J. A. M. A. 102 829 (Mar 17) 1934

## CALCIFIED HYDROCELE OF THE TUNICA VAGINALIS TESTIS\*

### Case Report

BY C. J. E. KICKHAM, M.D.†

TWO years ago, it was my privilege to report before this Association a case of "Calcified Hydrocele Simulating Tumor." At the Pondville Hospital recently, we encountered a patient in whom a similar pathological entity was present. However, the calcified process in this case was found to be far more advanced than that in the case previously reported.



X-ray of the external genitalia and pubic bones delineating calcification of a hydrocele in the right scrotum.

The patient Pondville Hospital Number 7712 a retired bookkeeper of eighty-six years was admitted on April 10, 1933 with a complaint of bleeding from the rectum of two months duration. For eight months previous to admission he experienced considerable rectal tenesmus, diarrhea, and inability to

\*From the Urological Service of the Pondville Hospital at Norfolk.

†Presented at the Annual Meeting of the New England Branch of the American Urological Association at Boston, November 8, 1934.

Kickham, C. J. E.—Assistant Urologist, Pondville Cancer Hospital, Norfolk. For record and address of author see "This Week's Theme," page 412.

control his bowels. These symptoms had become progressively worse. He stated that there had been a mass present in the right side of his scrotum for over forty years. As far as he could tell, however there had been no appreciable increase in the size of the mass over that long period. Also there had been no pain or discomfort associated with the condition. There was no history of injury.

Examination revealed the presence of a stony hard non-tender mass, somewhat larger than a hen's egg in the right scrotum. It did not transmit light. Palpation of the mass elicited a deep grating crepitus. It was not subcutaneous. The spermatic cord was normal. The epididymis could not be identified. The scrotal skin was not adherent. The left scrotal contents were normal. Rectal examination disclosed an advanced inoperable malignancy of the rectum. A calcified hydrocele seemed to be the most probable diagnosis. However the remote possibility of calculi was considered in view of the grating crepitus which suggested the presence of a "bag of stones." The Prolan A test to determine the presence or absence of anterior pituitary hormone in the urine was not carried out as the history and clinical findings excluded the diagnosis of neoplasm of the testis.

X-ray examination of the external genital region delineated a circular area of calcification measuring 5 cm. in diameter in the region of the right testis consistent with calcification of a hydrocele.

In view of the patient's age and the presence of advanced inoperable malignancy no specific treatment of the condition was indicated. A program of general care and symptomatic treatment was carried out and the patient expired on October 13, 1934. Permission for postmortem examination was obtained.

Pathological report of the specimen—the contents of the right scrotum removed. Specimen consists of a calcified sac 6x5x5 cm. The wall is thickened and measures .3 to .5 cm. On opening the sac, one finds about 15 cc. of milky fluid with distended particles having a distinct glistening sheen. The inner wall of the tunica is covered with ragged brownish putty-like material with an underlying calcified bed. The testis is encased by this thickened tunica and is compressed posteriorly. The epididymis does not appear remarkable. Diagnosis—Calcification of a hydrocele of the tunica vaginalis testis.

The above case is reported in view of the unusual clinical and pathological findings. It emphasizes the value of x-ray examination in masses of the scrotum which do not transmit light and the importance of crepitus as a diagnostic sign. The Prolan A test should be carried out in all cases of scrotal enlargement in which the diagnosis of malignancy has not been excluded.

## REPORT OF UNUSUALLY LARGE MALIGNANT GROWTH IN UNDESCENDED TESTIS\*

BY EDWARD J O'BRIEN, M.D.†

**M**cKENZIE and Ratner in a recent communication reviewed the literature on this subject and at the same time reported three new cases. In 1931 they made a report on tumors of the testis. In that report they stated that they did not believe undescended testes per se were seriously predisposed to malignant degeneration, and according to their most recent offering in which they cover the literature quite thoroughly, they have not changed their opinion. In reviewing the literature on the subject there is a wide variation in reports. Various authors differ widely in their figures, so much so that some reports asserted that tumor formation occurs anywhere from 30 to 300 times as often in the undescended as in the normally placed testicle. There is also a vast difference of opinion as regards the relative infrequency in inguinal and abdominal cryptorchids. McKenzie stated in his 1931 communication that he had not seen a case of malignancy in a series of 105 cases of undescended testis but since that time has had thirteen additional cases of tumor of the testis in which three were in undescended testes. Some of the contrasts in the reports I will cite.

Sixty-seven cases of tumor of the testis were reported by Cunningham, none of which were in an undescended testicle. Kocher found only one case of malignancy in 1000 cases. Eccles reports 859 cases of undescended testis without finding malignancy in any of them. In a series of 1357 cases Coley did not have a single case. McKenzie further states that in looking over the medical records of the World War there have been three and one tenth cases to every 1000 men examined and he uses this as a basis for his theory that undescended testes are not predisposed to malignancy. He feels that there should have been many more cases reported but no mention is made of them. Other authors vary in their reports, for Hinman reviewed 649 cases of cancer of the testis and found twelve and two tenths per cent in undescended testicles.

Regarding the treatment of this condition there is also some difference of opinion. Some authors who are firmly convinced of the potential malignancy of the undescended testis advise orchidectomy in every case. And to emphasize their point they cite the case of Dr. Fred Lund who in 1924 reported a case that developed malignancy after orchidopexy. In his search of literature McKenzie states that he was

able to find only one similar case and that was reported by Rea.

J H W aged thirty nine, male, single, was admitted to the Somerville Hospital on November 20, 1933.

**Family History** Mother died of arteriosclerosis in 1929. Father living and well. One brother and three sisters living and well. One brother and one sister died in childhood.

**Past History** Scarlet fever. Occasional cold. Duodenal ulcer for five years. Auto accident with scalp wound. No operations.

**Present History** For the past year has had symptoms referable to lower abdomen and pelvis. Periods of constipation. Frequency and occasional dysuria. Irregular pain in left lower abdomen radiating to the left back and left thigh. Appetite good except when ulcer was active. Sleeps well. Best weight 190 lbs. Lost 20 lbs in past year with diminished "pep."

**Physical Examination** Well developed and nourished young man. Pulse, temperature and respiration normal on admission.

**Head** Skull symmetrical, no exostoses or injuries. Scalp clean, no scars. Hair of good growth and texture.

**Skin** Color normal, clean, warm and moist and of elastic texture. No purpuric spots, rashes or other lesions.

**Eyes** Pupils equal, regular and react to light and accommodation. No lid lag, strabismus or nystagmus. The conjunctivae show no hemorrhage, jaundice or injection.

**Ears** Hearing good, no tenderness or discharge.

**Nose** No discharge, deformity or obstruction. No tenderness of sinuses.

**Mouth** Mucous membranes of good color. Teeth well preserved. Tongue protrudes in the midline with no tremor. Tonsils are neither hypertrophied nor injected. Pharynx shows no postnasal discharge or injection.

**Neck** No abnormal pulsations. Thyroid not palpable.

**Chest** Symmetrical, expansion equal on both sides. Heart. Apex impulse is in the fifth interspace within the nipple line. No palpable thrill, percussion reveals no enlargement or displacement. Heart sounds are regular, not rapid, and of good quality. No murmurs heard. The pulse is regular and of good quality. Lungs. No change in tactile or vocal fremitus. Breath sounds are of the normal character. No rales and no friction rubs.

**Abdomen** Not distended but presents a low abdominal tumor which is hard, irregular, not especially tender and about the size of a five months' pregnancy.

**Genitals** Normal except that the left testicle is not in canal or scrotum. Inguinal ring on left side admits finger tip.

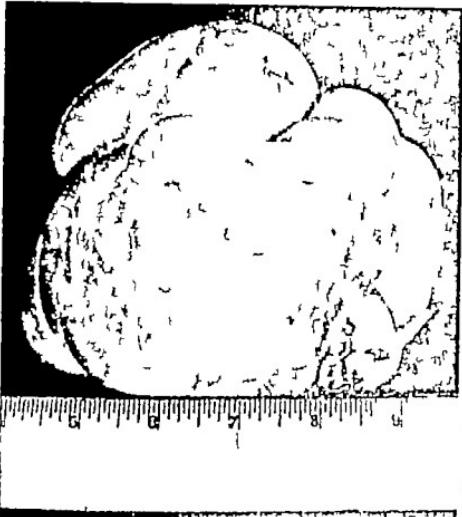
**Extremities** No deformities, paralyses, abnormal sensations, tremors or atrophy. No varicosities or edema.

\*Presented at the Annual Meeting of the New England Branch of the American Urological Association at Boston November 8, 1934.

†O'Brien, Edward J.—Visiting Surgeon Cambridge City Hospital. For record and address of author see This Week's Issue, page 452.

Reflexes Equal and active. No Babinski or ankle clonus.  
Rectal examination Negative.

Short report of G I series by Dr Paul Butler  
The examination of the gastro-intestinal tract showed a deformity in the first part of the duodenum which is quite typical of a duodenal ulcer. There was some pressure on the lower small intestine and on the sigmoid flexure. This is evidently caused



Photograph of unusually large malignant growth in an undescended testicle

by a large tumor mass in the lower abdomen. This mass apparently does not involve the bowel and is not causing any obstruction

#### Laboratory data

Urine straw-colored, clear 1020 acid. Albumin none. Sugar none. Phthalein normal. RBC 4750,000 W.B.C. 7800. Hemoglobin 70. Blood—Nonprotein nitrogen 26 mg. per 100 cc. of blood. Wassermann Kahn negative.

Patient was seen by me in consultation with Dr Eugene Maguire on November 21, 1933 at which time I did a cystoscopy and pyelograms. Bladder was normal. Pyelography showed a mild degree of dilatation of the pelvis of both

kidneys and a slight kink of the upper portion of the left ureter was demonstrated. There was a shadow in the x-ray plate extending from the pelvis almost up to the lower pole of the left kidney. This appeared to be a neoplasm. Following this examination I advised laparotomy for the removal of the tumor. It is my opinion at this time that this man had a neoplasm and probably an intra-abdominal teratoma of the testicle.

November 24, 1933 Operation Laparotomy Low abdominal incision extending from about one inch above the umbilicus and to a point five inches below was made. On opening the abdomen a smooth lobulated tumor was seen. This filled the entire pelvis and was adherent to both large and small bowels and all the contiguous tissues showing that there must have been considerable inflammatory reaction going on. The bladder was dissected free from the growth. With much difficulty the tumor was freed from the pelvis and it was found that the mass had a pedicle which originated from the spermatic cord. The tumor was removed and all raw surfaces covered with peritoneum. A small cigarette drain was placed in the tumor cavity to take care of any oozing. The abdominal wall was sewed up tight in layers about the small drain. The patient had an uneventful convalescence.

#### Pathological Examination by Dr Timothy Leary

**Gross examination** The tumor is roughly spherical, nodular measures 15.5 x 15 x 18 cm in its greatest dimensions. Attached to the surface at one point are bands of fibrous tissue among which some fat is present. The spermatic cord could not be identified grossly. On section the tumor is yellowish white translucent, homogeneous.

**Microscopic Examination** Tumor is made up of alveolar masses of large cells rounded or polygonal with poorly staining cytoplasm and large round vesicular nuclei mitotic figures are fairly abundant. Tumor is fairly well encapsulated. Sections were taken from band-like adhesions on surface thought to be spermatic cord. One of these shows areolar and fatty connective tissue supporting a group of large vessels, and also smaller vessels about some of which bundles of unstriped muscle occur. In one of the smaller vessels a few tumor cells are seen, one in mitosis.

**Diagnosis** Embryonal carcinoma with characteristics of testicular embryo.

Following discharge from the hospital the patient was closely watched and now one year following operation he is apparently well.

## REPORT OF UROLOGICAL CASE DISCOVERED IN COURSE OF EXAMINATION FOR OTHER AILMENT\*

BY EDWARD H. TROWBRIDGE, M.D. †

M<sup>r</sup>. W. K. H., aged twenty-one weight 198½ lbs., was treated August 13, 1934 for pustule of calcaneous area on sole of right foot. Physical examination did not reveal any special focus of infection

other than the foot, which was duly treated and the patient recovered. On the second visit, by request, a specimen of twelve hour urine, was furnished which did not disclose the condition of the kidneys at that time.

A short time after the patient had recovered the father wished to take out a life insurance for the young man and his urine was sent to the medical examiner of the insurance company and the young

Presented at the Annual Meeting of the N. E. England Branch of the American Urological Association at Boston, October 8, 1934.

\*Trowbridge, Edward H.—Surgeon in chief to the Harvard Private Hospital at Worcester Mass. For record and addl. f author see "This Week's Issue" page 45

man was passed. The medical examiner, at the home office of the insurance company, requested a sample of urine, according to routine custom, and on examination, found pus in the urine and the young man was temporarily denied insurance with the statement, however, from the insurance company's examiner that it was probably something minor and would probably disappear.

This information was given when the young man appeared a second time at my office on October 5, 1934, when there was another small accumulation of pus in the neighborhood of the former pustule. Three specimens of urine were examined in the course of a week, and in each specimen there were detected pus, phosphatic crystals, no red blood cells, no casts, no special accumulation of epithelia suggesting the source of the pus, no hematuria at any time. The patient was advised to have a plain x-ray plate of the kidney, which was taken on October 22, and no shadow revealed in either kidney. On October 23, the patient was subjected to intravenous injection of hippurhan with the following report from the roentgenologist: "The first radiograph made immediately after the injection of hippurhan shows the pelvis and calices of the left kidney well filled. This appears to be a normal kidney with the true pelvis unusually large and the calices comparatively small. The upper calyx is much longer than the other calices, which is not unusual."

"The region of the right kidney shows no pelvis shadow, but there are indefinite shadows in the kidney itself."

"Radiographs made fifteen, thirty five and sixty minutes after injection show no marked change in

the left urinary tract. The left ureter contains a small amount of injection, with no dilatation, and the previous mentioned opaque bodies in the bony pelvis are apparently not in the ureter."

"The right kidney shows progressive filling of the calices so that finally the kidney appears to consist principally of globular masses of opaque material varying in size from  $\frac{1}{2}$  to  $1\frac{1}{4}$  inches in diameter. No injection is seen in the right ureter."

"The bladder shows nothing remarkable."

"X-ray Diagnosis Right pyelonephritis."

On October 24, the patient was subjected to a cystoscopy, which revealed a golf hole appearance of the right ureteral orifice, the border of which was distinctly reddened. The right kidney was duly catheterized and also the left, with an immediate appearance of urine dribbling through the left catheter, while none was discharged from the right. Phenol sulphonephthalein test was then administered and came through the left kidney in about six minutes, and very faintly a short time after from the right kidney. The left kidney secreted freely while only about two thirds of a teaspoonful of urine was secreted from the right kidney.

The patient showed a slight reaction from the catheterization, being confined to bed for two days inasmuch as so little kidney substance remains in the right kidney and its function is practically nil, the parents have been advised to have the right kidney removed as early as possible.

The urine submitted to me and to the insurance physician who passed Mr H., must have been secreted from the left kidney.

## TESTICULAR BIOLOGY, SCROTAL FUNCTION AND THE MALE SEX HORMONE\*

BY CARL R. MOORE, PH.D.†

DURING the last fifteen years the testis has been studied in my laboratory from the purely biologic standpoint rather than from the clinical aspects and I propose to-night to discuss with you some of the problems that suggest themselves as being of some probable interest to a group such as you represent. The first portion will deal with some of the better known phases relating to spermatogenetic activity and the second with more recent studies on hormone secretion and function.

### CRYPTORCHIDISM

It is well known that both man and mammals are subject to failure of testicular descent (cryptorchidism), and perhaps less well appreciated that bilateral cryptorchidism results in sterility. Several years ago, a good deal of time was devoted to an experimental investigation of the problem of cryptorchidism.

Experimental cryptorchidism has been studied in my laboratory on rats, guinea pigs, dogs, rabbits and sheep. The operation of removing the testicle from the scrotum into the abdomen is

simple, of course, in those animals where the inguinal canal remains open. For this purpose the canal is merely closed and the testicle not otherwise fastened in the abdomen. Such abdominally confined testicles, undergo a remarkably rapid degeneration of the germinal epithelium, exhibiting a complete disorganization of the seminiferous tubules within the period of one week. Fragmentation of the loosened cells, cytolysis and absorption continue so rapidly as to practically free the testicle of all germ cells within three weeks. There follows a continued involution of the tubules, containing now only Sertoli cells, and no recovery occurs however long the organ remains in the abdomen.

To answer the question whether recovery was possible after such marked degeneration, testicles in various stages of injury were replaced in the scrotum. Recoveries to the normal state occurred after apparently hopeless degeneration, and within a period of two to three months spermatozoa were again present.

Experimental cryptorchidism prior to the time of appearance of spermatozoa, such as fifteen to twenty days after birth in the guinea pig, is the nearest possible counterpart in these animals to congenital cryptorchidism in man. Such testicles returned to the scrotum five months

\*Read at the Annual Meeting of the New England Branch of the American Urological Association at Boston, November 8, 1934.

†Moore, Carl R.—Professor and Chairman of the Department of Zoology University of Chicago. For record and address of author see "This Week's Issue" page 452.

later recover their spermatogenetic function and possess spermatozoa from seventy to ninety days later. Such an operation for scrotal replacement of abdominal testes of a guinea pig is roughly equivalent to scrotal replacement in a man twenty to twenty five years old<sup>1</sup>.

One can scarcely deal with conditions that induce degeneration so quickly and so completely without making inquiry into the cause of the injury. In brief, successful elimination of such possible causes as interference with blood supply, nervous connections, pressure, or hormonal influences centered our attention on higher than normal temperature as a possible cause for the degenerative changes.

Experiments to test such an hypothesis were begun and a brief presentation of a few of them may be of interest. We measured the temperature simultaneously in the abdomen and scrotum on the same animal and found abdominal temperatures of rats, rabbits and guinea pigs to be from one and one-half to seven degrees C higher than those in the scrotum<sup>2</sup>. Harrenstein<sup>3</sup> (Amsterdam) found comparable differences in abdominal and scrotal temperatures in boys, the scrotum being one to three degrees cooler than the interior of the abdomen. It is thus a fact that abdominal temperatures are higher than those of the scrotum but it remained to show that the testicle was affected by such slight differences, or rise in environmental temperatures.

Unoperated guinea pigs received short treatments of increased temperatures applied to the scrotum by means of hot pads, electric heat, and water warmed from five to seven degrees C above normal body temperature. One period of twenty minutes of application to the scrotum of temperatures a few degrees higher than body temperatures was followed within a few days to two weeks by severe testicular injury and in more severe cases by temporary or permanent sterility, depending upon the degree of exposure to such elevated temperatures<sup>4</sup>.

Since, therefore, scrotal temperatures are lower than abdominal temperatures and since the testes are injured by short exposures to temperatures above their normal environment, and are caused to degenerate by elevation into the abdomen, it follows that the scrotum functions to lower the environmental temperature of the testicle and hence is a thermoregulator. It should follow, therefore, that interference with this thermoregulatory function should induce testicular injury even though the testicles remain in the scrotum.

Sheep present a large pendant scrotum that can be easily insulated against loss of heat. The scrotum of a ram was, therefore, loosely encased in woolen wrappings, and an outer waterproofed covering, and the animal permitted to run at large for a period of eighty days. Removal of the testicles showed the entire absence of any

normal seminiferous tubules, no tubules possessed spermatozoa and the majority showed severe degeneration with many possessing only Sertoli cells. The animal had sterilized itself with its own body temperature simply because of interference with the scrotal heat-regulatory mechanism. The testicle, though in the scrotum, came under the influence of temperatures slightly above normal scrotal temperatures due to the insulating cover<sup>5</sup>.

We can visualize, therefore, that the scrotum thin walled, devoid of subcutaneous fat, richly provided with sweat glands and capable of great relaxation and contraction presents a functional adaptation to a delicate need. Cunningham, a few years ago stated "various causes have been suggested for the formation of the scrotum, but no one has ever been able to suggest a use for it"<sup>6</sup>. It appears now that we are able to assign to it a useful purpose, that of regulating the environmental temperature of the testis. That such a function is not only useful but absolutely essential for germ cell formation is bountifully shown by the conditions in cryptorchidism.

#### VASECTOMY

The question of the efficacy of ligation or section of the vas deferens for the purpose of rejuvenation recurs time and again. The great impetus was given to it by the glowing accounts of Steinach of Vienna, in 1920. You will, no doubt recall the chief contentions (1) that blocking off the excurrent ducts from the testicle induces destruction of the germinal epithelium and an increase in the interstitial tissue, (2) that increased interstitial tissue means more hormone secretion, and (3) that excessive hormone secretion leads to a real rejuvenation such that in Steinach's cases old decrepit males became sleek looking vigorous and pugnacious youngsters. Promptly from this, and on the assumption that what is good for a rat is good for man, the operation was applied to man. The most glowing accounts of beneficial effects have been written.

Briefly analyzed we find that closure of the outlet passages from the testes of rats, rabbits, guinea pigs, dogs and sheep does not lead to loss of all germinal epithelium and in fact, more than 100 years ago Sir Astley Cooper in England showed that experimental ligation on the dog of five years' duration did not lead to loss of gametogenetic function. Secondly the evidence does not support the contention that an hypertrophy of interstitial cells follows. Thirdly if interstitial cell hypertrophy really occurred, as postulated it cannot be taken for granted that greater hormone secretion would follow. Fourthly, it is by no means established that excessive amounts of hormone are beneficial or that testis hormone in any manner leads to rejuvenation. Three years ago a fortu-

nate case of congenital absence of all outlet passage from the testicle (absence of entire epididymis, vas, and seminal vesicles) revealed that in such an adult guinea pig the testis was normal in size, actively producing germ cells (which were gradually destroyed and resorbed) and that no interstitial cell hypertrophy had occurred. Closure of the vas, perhaps better resection, is, of course, a simple and efficacious sterilization operation but there is no acceptable evidence that it has any value whatsoever as a measure effecting rejuvenation<sup>7</sup>.

#### TRANSPLANTATION OF TESTIS GRAFTS

Successful transplantation of testis tissue is a little difficult. The factors concerned are (1) obtaining successful vascular invasion of the transplant prior to necrosis of the tissue which involves relatively small amounts of tissue, (2) overcoming the normal host resistance to implants which may be cellular (lymphocytosis, phagocytosis) or serological and (3) utilization of compatible tissue which appears to be tissue from the same species.

The transplant can be placed at any point where vascularization is obtainable, subcutaneous, intraabdominal, or within organ substance (kidney), but the scrotum has, so far, proved to be the only location in which spermatozoa develop. From well over 100 transplants from young rat donors under the best conditions available, I obtained successful incorporation of approximately fifty per cent<sup>8</sup>. The persistence of a palpable nodule is no evidence of graft persistence since I have sectioned quantities of such nodules only to find connective tissue or scar tissue. Viable grafts will secrete hormone but all evidence indicates that autolyzing masses of testicles do not liberate detectable amounts of hormone. With sufficiently reliable and sensitive hormone indicators to detect the secretion produced within two days by normal testes, we have been unable to detect any hormone liberation from two rat testes undergoing autolysis in subcutaneous positions<sup>9</sup>.

#### INTERNAL SECRETIONS

The principal cause of the tardiness in obtaining the active principle of the internal secretions of the testis has been the lack of practical methods of identification of the substance or substances. I propose to discuss this subject with you and to lay down what appear to me to be some general principles of hormone secretion and function.

Within the last few years the application of regression of the cock's comb following castration, and its growth response to testicular hormone injections, has been perhaps the most widely used test employed. By utilization of this test, McGee in Koch's laboratory of biochemistry at the University of Chicago first successfully

prepared potent hormone preparations. The active principle was obtained from the lipid fraction of fresh testicle tissue from the bull. It was found capable of inducing the growth of the comb of capons to essentially the normal cock type.

In cooperation with McGee, Koch and Gallagher and a group of my own students we were able to develop satisfactory methods on mammals for testing for the presence of the substance and to study its biological effects. I may say that the hormone effective in the capon was also effective in mammals. The material is sex specific but is not species specific.

The *spermatozoan motility test* for the internal secretions of the testis rests upon the fact that spermatozoa in the epididymis of a guinea pig remain alive and capable of exhibiting motility when suspended in physiological saline solution for a longer period of time in the presence of hormone than in its absence. Spermatozoa confined in an epididymis surgically isolated from the testicle remain capable of motility for a period of sixty-five to seventy days if the opposite testicle is present to provide a source of hormone. When no hormone is present, capacity for motility is lost by twenty-three days after operation. Injection of testis hormone into animals just castrated permits spermatozoa to remain viable for normal lengths of time<sup>11</sup>.

The *electrical ejaculation test* conducted upon the guinea pig depends upon inducing an ejaculation when the animal receives an electrical shock through the brain. A normal male produces an ejaculate once each week of approximately one to three grams, but a castrated male is unable to void an ejaculate because of loss of secretory function on the part of the prostate gland and seminal vesicles which are the main sources of the semen. Males castrated for six months, however, have produced typical coagulated ejaculates after ten days of treatment with testis hormone<sup>12</sup>.

Morphological indicators of testis hormone in the rat are provided by changes occurring after castration in the prostate gland, seminal vesicles, Cowper's gland and the vas deferens. Within forty-eight hours after castration the seminal vesicles reveal changes visible in the finer cellular character of this organ and within four days in the prostate gland. Twenty days of castration bring on perfectly definite histological changes in all these structures.

The injection of testis extracts has prevented the development of all castration changes so far noted in this animal. When the injections were delayed until after such changes had occurred, complete restoration to normal morphological states has been attained by daily injections of from ten to twenty days<sup>13</sup>.

## PRINCIPLES OF SECRETION AND FUNCTION

**Source.** The hormone has been obtained from extraction of the fresh testicles of the bull, goat, ram and pig. It has been recovered from the urine of men but not of boys under ten years.<sup>13</sup> It has been found in small amounts in the blood of bulls and goats. The yield on extraction is surprisingly small and tons of bull testes as well as hundreds of gallons of human urine have been extracted in Koch's laboratory yet insufficient amounts for laboratory investigations have been prepared. **Secretion** of the hormone is a continuous process when once initiated in the rat, and presumably in man for in the rat a forty-eight hour period of castration is registered by morphological changes. Hormone is not stored in the body but is excreted in the urine. The majority of vertebrate animals secrete it but once a year for short periods. Though the testicles are intact, the accessory organs of reproduction are in a castrate condition for the greater part of the year. Injections of hormone restore the functional state within a week so that it is certain that the testicle does not produce the hormone in the seasonal breeding types except during the breeding season.<sup>14</sup>

## RELATION TO HYPOPHYSIS

The demonstration is now complete that regulation of testicular activity both spermatogenetic and hormonal, does not reside in the organ itself but comes from the outside. The hypophysis or pituitary gland is at least a major factor in such regulation but it is unknown whether, or to what extent, other organs of internal secretion participate.

The brilliant work of Philip Smith and his colleague, Engle, in this country and of Zondik and Aschheim in Germany with the many others who have participated, has revealed the dependence of the gonads upon the hypophysis and the responses of the gonads to stimulating agents.<sup>15</sup> Removal of the hypophysis, as well as certain hypophysial disorders leads to the inability of the gonads to produce germ cells or hormone. Introduction of hypophysial material or extracts stimulates the gonads *exclusive*ly. The testis responds in a remarkable fashion with increased hormone secretion but stimulation of the spermatogenetic function is less clearly indicated. The hypophysis, therefore, produces a hormonal substance that stimulates testicular activity and the amount of testis hormone secreted is an expression of the amount of hypophysial secretion that reaches the testis through the blood stream. This amount, however is probably always insufficient to enable the testis to function to its full capacity for introduction of greater quantities of the material induces greater testicular secretion as the

more is in size of the accessory reproductive organs indicates.

**Hypothetical nature of testis hormone.** When one reflects on the question of the function of the male sex hormone some answer stands out clearly but of certain phases we are very ignorant. First, it is clear that the function relates primarily to reproduction. When spermatozoa are produced they must be so transmitted as to enable a meeting with the egg. In lower forms particularly invertebrates there is no evidence of the existence of testis hormone. With the vertebrates, however, the character of the genital system is more complex consisting in mammals of the epididymus, vas deferens, prostate and Cowper's gland, seminal vesicles and penis, all of which are fundamentally concerned with providing a fluid medium for transfer of ripe spermatozoa. Out of the breeding season these structures are non-functional. A few mammals such as the rat, rabbit, guinea pig, and man remain in a continuous reproductive state, and hormone is secreted throughout the reproductive period. It is clear that all the accessory reproductive organs are controlled by testis hormone. Secondly, it is clear that the sex drive of lower vertebrates is conditioned by testis hormone. Mating responses occur only during the breeding season when hormone is being secreted; it can occur whether germ cells are produced or not, and it does not occur if the testicles have been removed. Thirdly, it is also clear that certain more or less incidental, but unimportant characters for breeding purposes are conditioned by testis hormone, such as certain horny growths of mammals, the large comb and wattles of birds, the voice of man; perhaps also certain regulations of hair growth, though this relation is by no means clear.

But to this general biological horizon of the male hormone have been added the popular conceptions of traditions and beliefs of antiquity and the unwarranted postulates of doctors of medicine. Thus the almost universal popular conception that a castrated man be of no earthly use should be contrasted with the centuries old custom of castration of domestic animals in many cases to improve them for certain purposes. Certain doctors of medicine have had a wide influence by emphasizing that certain procedures, supposedly involving manipulation of the hormone level as by testis transplantation, vasectomy, and more recently from injection of hormone, lead to increased length of life, better appetite, sharpened mentality, sound sleep and that many organic ailments have been benefited, such as diabetes, tuberculosis, neuritis, locomotor atrophy, rheumatism, hence full cure etc.

When we examine the situation more closely for the real truth of the situation, so far as known, we find surprisingly little evidence of

a reliable character that the testis hormone in man exerts any beneficial effect aside from its control over the accessory reproductive organs, even here circumscribed data are all too few

If we turn to the eunuch for what little information we have of a scientifically recorded nature, we find that despite the economic, social and hygienic level he is privileged to occupy, history records major attainments for the eunuch in governmental, military and general pursuits. Instead of being short-lived he is reported to be long-lived, instead of the elimination of all sexual inclination, we have reports of considerable promiscuity. Recently McCartney<sup>17</sup> examined twenty eunuchs and reported ten cases of gonorrhoea. We have all too few records of cases such as that reported by Rowe and Lawrence in this city<sup>18</sup>. The energetic young man of wide travel experience had both testes removed because of certain pathology. Nine years later a successful marriage changed the psychological horizon and from a lethargic, unambitious state there emerged a reinvigorated individual who organized a new business venture in another part of the country.

When we have developed a scientific attitude and have freed our minds from mythological traditions, we will develop a proper state for a real examination of the question of the value of male hormone to man.

One negative value appears to stand out very suggestively and that is that the hormones produced by the gonads are not gonadal stimulants. We do not know of any case in endocrinological study where the secretions of an endocrine gland exert a direct influence upon the gland secreting them. Thus insulin does not stimulate a pancreas, thyroxin a thyroid, pituitrin the pituitary, adrenalin or cortin the adrenal. Why then should we expect testis hormone to stimulate the testis or theelin or estrin the ovary? Indeed the facts show that rather than stimulation the reverse condition obtains, gonad hormones have proved injurious to the gonads. Thus injections of estrin or theelin into normal rats, dogs and monkeys lead to ovarian degeneration<sup>19</sup>. We have likewise shown that injections of replacement doses of testis hormone daily into normal young male rats for a period of two to three weeks are injurious to the testicles<sup>20</sup>. Testicular weight of such treated males compared with littermate controls is from twenty to fifty per cent reduced, tubules show injury and no spermatozoa are present. There is no information at hand that even suggests that gonad hormone would improve a hypofunctioning gonad, but every day in this country probably sees the injection for such purposes—especially theelin into women for alleged hypo-functioning ovaries.

#### REGULATION OF HORMONE SECRETION

An array of puzzling facts can be assembled to introduce the question of hormone secretion

1 The testicle though capable of secreting hormone long before puberty does not secrete detectable amounts

2 The testicle probably never exerts its maximal potentialities for hormone secretion

3 In seasonal breeders though the testicles are present during twelve months they secrete hormone for only two, three or four months

4 Excessive secretions are injurious to the gonads

We have offered a working hypothesis to account for the regulation of hormone secretion based upon a reciprocal interaction between the gonad and hypophysis. Hypophysial secretions stimulate the gonads and the latter produce germ cells and gonad hormone. The gonad hormone stimulates the end organs (accessory reproductive equipment) but in sufficiently high doses lowers the secretory output of the hypophysis. This diminution of hypophysial secretion lowers the gonad hormone output and thus the oscillation of these secretions, probably also involving other secretions, is the balancing mechanism of control within the organism<sup>21</sup>.

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## DISCUSSION

Dr. GEORGE G. SMITH We have been listening to a very interesting and fascinating talk. There are few of us who can contribute a great deal to this discussion but I am sure a great many of us have questions we would like to ask Professor Moore.

There are two aspects that are of direct interest to us, that I wish Professor Moore would comment on if he cares to. One is the effect of this hormonal secretion upon hypertrophy of the prostate, whether it does influence it or not, and the other is the relation of this to the descent of the testes. I would like to know whether he thinks there is any reason to believe that descent of the testicle can be influenced by the injection of hormone of any sort.

Dr. FULLER ALBRIGHT I would like to have Professor Moore's opinion as to the best test to use in determining whether the normal male is putting out a normal amount of hormone. I would also like to ask him what estrin does to all these various tests in the castrated male, whether it has been shown that the male and female sex hormone are absolutely different. There is some question as to whether we find estrin in males and I would like to have a discussion of the difference between the male and the female.

Dr. E. L. MERRILL I was interested in what Professor Moore said about injecting theelin into rats and wrecking the gonads. Does he believe that in the case of young female children where we might use theelin that we should endeavor to change the epithelium in treating gonorrhoeal vaginitis? Would there be any possibility that we might be causing some damage to the ovaries of these young female children who are not developed as yet?

Dr. FLETCHER H. COLBY I would also like to ask Doctor Moore if he could possibly apply his knowledge to some of our own particular problems. I edge to some of our own particular problems. I think we all agree that testicular extracts etc., are

of no value. It evidently has to be done through the stimulation not of the testicles themselves but of the pituitary. Are there any substances which will stimulate the pituitary with possible chance of stimulating spermatogenesis? Even if there is yet no experimental evidence of that, are we entirely wrong in employing certain preparations which we have used on the theory that there is a possibility of stimulating the pituitary and in that way possibly raising the male's lowered fertility?

Dr. CARL R. MOORE Regarding prostatic hypertrophy I do not think it is a male hormone problem but I am not certain. One can produce enlarged prostates by injecting male hormone. We have injected normal young male rats with the male hormone and obtained decreases in weight of, and injury to the tubules of the testis. At the same time however the prostate may be increased four to five times that of the untreated control and the seminal vesicles even larger in proportion. I remember the figures in one case in which testis weight was reduced below the untreated control by sixty per cent, yet the seminal vesicles were increased by 800 per cent. The end organs (here seminal vesicles and prostate) will respond to male hormone irrespective of whether this is provided by stimulating the testicle to produce it through gonadotropic substances or by administering it subcutaneously through injection. In either case the prostate become greatly enlarged but it is a functional enlargement, not the typical non-functional hypertrophy of the senile man. I am not offering any suggestion relative to treatment of prostatic hypertrophy by the male hormone.

In regard to testicular descent I believe that the testis hormone is a decided factor but rather than administering it as such it appears at present preferable to employ gonadotropic substances to induce the intact testis to secrete the hormone under stimulation. I am not acquainted with an active male hormone preparation on the market. The yield from testis tissue or urine is small and to maintain a castrated male rat with normal accessory reproductive organs requires the daily injection of the total effective extractives from approximately fifty grams of tissue each day. In the rat it is difficult to perform the operation for experimental retention of the testis in the abdomen so effectively that it will remain undescended while large quantities of male hormone are present. The scrotum becomes enlarged and the canals tend to enlarge and re-open. In testicular undescendence it would appear advisable to try injections of gonadotropic substances before operation for scrotal placement. Dr. Sexton of St. Louis has reported some success from such treatments. Obviously the condition of the organ itself, whether adherent, or with shortened cord, introduces certain limitations to the treatment.

Replying to Dr. Albright's question regarding the best method for detecting the amounts of hormone present we have used in the rat both the prostate and seminal vesicle tests. The prostate gland reacts to smaller amounts of substance than do the seminal vesicles and we have found in some cases an apparent normal prostate but seminal vesicles of a castrate type. Normality of the seminal vesicles requires the presence of greater amounts of hormone and where these are normal the prostate will always be found to be normal. A combination of the two tests in each animal has much to recommend it.

The injurious effects of gonad hormones on the gonads were illustrated particularly by reference to the effects of estrin in the normal male. Such treatment caused severe injury to the testicle but so does the injection of testis hormone. Estrin injections into normal females injure the ovaries but

stimulate the uterus. The only explanation for such injuries I have been able to offer is the one common to the two conditions, namely an injury to the hypophysis by excessive amounts of the hormone of either sex and the consequent gonad injury from defective amounts of hypophysial secretion.

Dr Merritt raises the question of permanent damage to ovaries of normal females from estrin injections. In all cases where the problem has been followed subsequent to cessation of estrin injection, the animals (rats) have returned to a reproductive state, the damage unless decidedly severe is probably not permanent.

Dr Colby asks about the relation of male hormone to sterility. So far as we know, male hormone is entirely ineffective in cases of sterility. What apparently is defective is pituitary activity and we do

#### CONDENSED DIRECTIONS TO PATIENTS ON HOW TO LIVE WITH ANGINA PECTORIS

It is often possible to live a moderately active life of normal duration in spite of your trouble, provided you adopt certain simple rules of living.

1 Cultivate an optimistic nature as to the future. Do not place reliance on statements, and do not accept advice from others than your doctor.

2 The measure of how much exercise and work you may do is determined by how much is required to produce your distress. Do just a little less than produces your pain. Excessive physical strain even for a short time may produce serious complications.

3 Avoid emotional upsets like anger, worry, fretting, and even exciting social life. Even joyful excitement, if excessive, may be harmful. Do not let minor things irritate and disturb you.

4 Your diet will be regulated by your physician. If you are obese, reduction diet will accomplish a great deal for you. If you are of normal weight, avoid heavy, hearty meals. Better eat five light meals than three heavy ones. No particular food need be omitted unless the doctor tells you so. Rest for fifteen to thirty minutes after each meal. Avoid banqueting. One overeating bout may cause serious trouble.

5 Tea and coffee are seldom of importance unless taken to excess. Whiskey, or brandy, in moderate doses is often helpful, seldom harmful. Do not drink large quantities of fluids at one time. Tobacco in large amounts is harmful to most everyone, in moderate amounts to many, and even in small amounts to some. It is well to be very moderate in its use, or abstain from it entirely.

6 Rest periods though of only short duration are of great help. Frequent vacations even for a few days are very valuable. A Saturday afternoon or a Sunday in bed, retiring early at night, lying on a couch after meals, or just lounging about the house,

not yet know how to stimulate the pituitary. Work by Rowan in Alberta has shown that gradual daily increases in the length of the day (by additions of electric light at dusk) have been effective in causing the testes of birds to resume activity and to produce spermatozoa in mid-winter. Shortening of the day period of light led to reduction of this high peak of activity. Environmental influences (light periods or other factors) may be found effective measures for hypophysial stimulation but our knowledge of these matters is at present very limited. I do not know how to remedy those cases of borderline sterility by hormone treatment, but rational experimentation, a critical attitude, and continued efforts rather than sporadic ones are to be recommended as a means of advancing our knowledge of these conditions.

are different methods of resting. Your circumstances will suggest special times and methods of resting.

7 Avoid constipation with straining at stool. If you have difficulty in urination, tell your doctor about it. Sexual intercourse is usually better omitted.

8 Do not rush after trains or to keep appointments. Plan so that such haste will be unnecessary. Do not walk against high winds, up steep hills or up long stairs. Do not shovel snow, dig in gardens, or do heavy work. Avoid exposure to extreme cold, and travel if possible in closed vehicles during zero weather. Do not indulge in competitions in whatever form of play you attempt. Avoid exercise or work in the heat of the day and with exposure to the sun. Sun baths have no beneficial influence on your trouble and the excessive heat is exhausting.

9 Enjoy the pleasures of social life, the table, the outdoors, and your work, within your limitations.

10 Always carry your nitroglycerine tablets with you. If you follow the directions in the preceding paragraphs, you will seldom need them, but do not hesitate to take them freely as ordered by your doctor.

11 If you are planning dental or other surgery, talk it over with your doctor, or if you are planning long journeys or unusual tasks, get his advice before undertaking either.

12 If at any time your pain is unusually severe, and is not relieved by the usual procedures, go to your home in the manner involving the least muscular exertion, preferably by taxicab, go immediately to bed and send for your doctor. Do not accept indigestion as an explanation for the persistent pain.

JOHN SPROULL, M.D.

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Haverhill, Massachusetts

NOTE Copies in booklet form may be obtained at the cost price of three cents per copy plus postage on application to Dr Sproull.

## THE VISUAL MECHANISM IN DIABETES MELLITUS

(A Comparative Study of 2002 Diabetics, and  
457 Non Diabetics for Control)

BY J. HERBERT WAITE, M.D.,\* AND WILLIAM P. BEETHAM, M.D.\*

(Continued from page 379, Issue of February 28, Volume 212, Number 9)

It is difficult to decipher the rôle played by iridescent crystals in the lens. In diabetics, we found bodies resembling cholesterin crystals in the anterior cortex of 468 lenses (11 per cent), and in the posterior cortex of 316 lenses (8 per cent). Of seventy-five diabetics with blood cholesterol above 229 mg per 100 cc., only seven patients (9 per cent) showed visible iridescent crystals in the anterior cortex of the lens. In the non-diabetics, we found similar bodies in the anterior cortex of ninety-seven lenses (10 per cent), and in the posterior cortex of thirty-nine lenses (4 per cent), Plate IX. In 110 children with diabetes, White and Hunt<sup>19</sup> found that abnormally high cholesterol in the blood was an exception in uncomplicated diabetes, that there was no close correspondence between ly perglycemia and hypercholesterolemia, and that increase of cholesterol in the blood of children is regularly observed only in overnutrition and in coma. In the 297 juvenile diabetics of this series, all under the age of twenty years, we found

cataracta complicata are more frequent in diabetics than in non diabetics. Our figures would indicate that cataracta complicata are almost equally distributed between the two groups.

CATARACTA COMPLICATA—IN DIABETICS  
AND NON DIABETICS

(DISTRIBUTION BY AGE)

Diabetics	Eyes Exam	Cata racta	%	Age	Non Diabetics	
					% Cata racta	Eyes Exam.
		Com plicata			Com	plicata
130		0		Under 10		
464	11	2%		10-19		
384	13	4%		20-29		
319	8	2%		30-39	1%	3 130
550	16	3%		40-49	3%	9 306
1033	55	5%		50-59	10%	24 233
999	102	10%		60-69	18%	31 170
253	42	16%		70 up	16%	9 66
4001	246	6%			8%	75 914

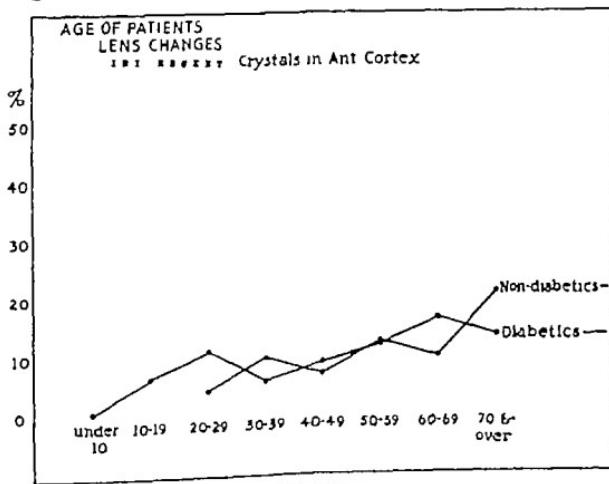


PLATE IX.

iridescent crystals in the lenses of twenty nine, and in six of these patients cataract was associated.

*C Complicated cataract.* The opinion has often been expressed in the literature that cata-

Waite, J. Herbert—Clinical Professor of Ophthalmology, Harvard University Medical School. Beetham, William P.—Assistant Surgeon, Massachusetts Eye and Ear Infirmary. For Assistant Surgeon, Massachusetts Eye and Ear Infirmary, see "This Week's Issue" records and addresses of authors see "This Week's Issue" page 46.

In diabetics eighty per cent, in non-diabetics eighty five per cent of all complicated cataracts were found in patients over fifty years. The average age of the diabetics with complicated cataract was fifty eight years, while that of the non-diabetics was sixty years.

We are inclined to think of complicated cataract as associated with disease of the posterior

segment of the globe, or with toxic ocular fluids. Diabetics with complicated cataract exhibit no obvious correlation between the lens changes and the duration of diabetes or the amount of insulin administered, or between the blood sugar content or the presence of so-called diabetic retinitis. An average blood sugar content of 234 mg per 100 cc was found for 102 diabetics having

#### CATARACTA COMPLICATA—IN DIABETICS (DURATION OF DIABETES)

Duration Diabetes	Av Age Each Duration Group	Eyes Exam	Cataracta Complicata	%
Less 1 yr	40.1	1001	26	2%
1 19 yr	45.1	452	27	6%
2 29 yr	45.1	378	33	8%
3 39 yr	45.1	560	54	9%
5 99 yr	41.2	966	52	5%
10 15	55.2	419	31	7%
15 up	61.8	225	23	10%
		4001	246	

#### CATARACTA COMPLICATA IN DIABETICS— AMOUNT OF INSULIN

Amt Units Insulin	Av Age Each Group	Eyes Exam	Cataracta Complicata	%
None	56	697	35	5%
1-14	54	1004	75	7%
15-29	47	1366	92	6%
30-50	37	750	29	4%
50 up	26	184	15	8%
		4001	246	

ing complicated cataract\*, and of these there were sixteen patients (15 per cent) with a maximum fasting blood sugar above 300 mg per 100 cc. Among 103 recorded NPN in diabetics with complicated cataracts, only seven patients had values over 44 mg per 100 cc (7%). Among the 123 diabetics with complicated cataract, the fundi were visible in 111 patients, among whom deep retinal hemorrhages were found in forty-four (39 per cent), and superficial retinal hemorrhages in thirteen (10 per cent). In this same group of 123 diabetics with complicated cataracts, we find eleven cases of gangrene (9 per cent), eighteen cases of neuritis (14 per cent), five cases of coma (4 per cent), and two cases of syphilis (1 per cent).

Of course, complicated cataract does go on to maturity, as evidenced by the finding of fissures, vacuoles, and spokes in fifty per cent of all complicated cataracts recorded. In the mature cataract it is impossible to define the primary type by slit-lamp or any other means, and hence many complicated cataracts may escape proper enumeration.

*d / Flocculi* On account of the resemblance to flocculent chemical precipitates of anterior and posterior cortical lens opacities in juvenile diabetics, we have learned to speak of opacities of this type as "flocculi." Similar opacities have been described as "diabetic cataract" by Schnyder<sup>3</sup>, and by Goulden<sup>4</sup>, and as "snowflake" opacities by O'Brien, Molsberry and Allen<sup>5</sup>.

Among 297 juvenile diabetics of this series, we found with the aid of the slit-lamp eleven patients with flocculi, or about four per cent. Flocculi are always bilateral, and situated within the anterior cortical levels, but never in the nucleus between the Y sutures. In seven of our eleven cases, fine iridescent crystals were associated with the flocculi, and in the same levels of the lens. While flocculi may first appear just beneath the capsule of the lens, they tend to increase by invading the cortex more deeply, and they are frequently associated in the course of slowly progressive development, as in eight of our eleven cases, with posterior cortical degeneration, warranting inclusion under the term complicated cataract. One of our eleven cases of flocculi succumbed in coma. In six of the ten survivors, surgery has been applied to remove the cataractous lens or lenses.

The incidence of flocculi found in any series may depend upon many factors, such as the diligence employed in the slit-lamp search, the number of patients induced to attend on account of visual disturbances, and others. The earliest appearance of flocculi may be entirely missed in ophthalmoscopic examinations, and may exert no adverse effects upon visual acuity. Among twenty instances of cataract found in 126 patients studied, O'Brien, Molsberry and Allen found twelve "snowflake" cataracts, or about ten per cent incidence, but they also note that severe, prolonged, and poorly controlled diabetes was the rule in the cases with such lens changes. In half of our patients presenting flocculi, diabetes was poorly controlled at the time the patient first came under supervision. In the remainder of our patients presenting flocculi, the characteristic opacities appeared and multiplied in spite of the most satisfactory control of diabetes. One of these latter cases is well represented in case history No. 9535.

#### CASE NO. 9535

In October, 1930, the patient, S. B., a girl aged twelve years, was first examined. At this time, the duration of diabetes was seven months, with insulin therapy for a few days only. There was no history of coma. X rays disclosed a heart of normal size, and no sclerosis of the radial vessels. X ray of the chest for tuberculosis showed suspicious shadows. The blood pressure was 100/64. The blood Wassermann test was negative. The maximum blood sugar, fasting, was 270 mg per 100 cc, the maximum, non fasting, was 300 mg. The minimum blood sugar was 80 mg. NPN examined twice was 35 and

\* Of 123 diabetics with complicated cataracts blood sugar determinations were available in only 102 patients.

27 mg. There were no casts or albumin in the urine, and the urinary sugar decreased from 80 per cent to 0.3 per cent during the patient's hospital stay. On discharge from the hospital the insulin dosage was 34 units daily. No basal metabolism test was done.

The eye findings were as follows: the refraction, with homatropine cycloplegia, was

Rt. eye +3.25 sphere and +75 cylinder at axis 90 = 6/5

Lt. eye +8.25 sphere and +50 cylinder at axis 90 = 6/5

The accommodation measured 14 diopters in each eye. Maddox rod prism duction stereopsis, associated movements, convergence power and accommodation were normal. Examinations by slit lamp and ophthalmoscope were negative. The peripheral visual fields were full, and the blind spots of normal size. Intraocular pressure registered 31 mm in each eye by Schiötz.

In September 1931 the patient was again examined and gave a history of many severe colds. At this time the blood pressure was 104/78. The maximum blood sugar non-fasting was 140 mg. per 100 cc. There was no trace of sugar in the urine. When discharged from the office, the patient was advised to use 29 units of insulin daily.

The eye findings at this time were as follows: refraction, with homatropine cycloplegia was

Rt. eye +2.25 sphere and +50 cylinder at axis 90 = 6/5

Lt. eye +1.75 sphere and +75 cylinder at axis 90 = 6/5

The accommodation measured 14 diopters for each eye. Examination by slit lamp disclosed 1 iridescent crystal in the posterior cortex of the right eye, and 2 vacuoles in the posterior cortex of the left eye. The fundus examination was negative. Visual fields were full, and the blind spots were of normal size. The intraocular pressure registered 28 mm in each eye by Schiötz.

In December 1931 the patient gave a history of poor vision in the left eye over a period of two weeks; the urine had not been sugar free during that time. The heart was of normal size to percussion. An x-ray of the chest again gave shadows suspicious of tuberculosis. The blood pressure was 100/80. Maximum blood sugar fasting was 130 mg per 100 cc. Maximum blood sugar non-fasting was 170 mg. The minimum blood sugar was 80 mg. The NPN was 32 mg. Blood cholesterol was 189 mg. blood calcium 11.0 mg., and phosphorus 4.3 mg. Phenolsophthalein excretion was 40 per cent. The urine albumin was negative and the urinary sugar fell from 1.8 per cent to 0.1 per cent during hospitalization. The patient was taking 29 units of insulin daily on discharge.

The eye examination at this time disclosed the following facts: refraction, by homatropine cycloplegia was

Rt. eye +1.50 sphere and +50 cylinder at axis 90 = 6/5

Lt. eye -75 sphere = 6/6

The accommodation was 12 diopters in each eye. Examination by slit lamp showed that the anterior cortex of each lens was now filled with very fine foci, more marked in the left, with many associated small, more marked in the left, with many associated iridescent crystals. The secondary suture lines in the anterior cortices were visible and several large vacuoles were visible in the posterior cortex in polar position. The fundi were normal. Intraocular pressure registered 31 mm. in each eye by Schiötz.

In March, 1932 the patient was again examined, at which time the vision in the left eye was still reported as poor. Blood cholesterol was 171 mg., and the daily insulin dosage was 84 units.

The homatropine refraction was

Rt. eye +75 sphere and +50 cylinder at axis 90 = 6/5

Lt. eye -175 sphere and +50 cylinder at axis 90 = 6/7

No changes were noted in the slit lamp picture. The intraocular pressure was 22 mm. in each eye Schiötz and the fundi normal.

In September 1932 when the patient reported she gave a history of having received Dionin in May from Dr. Allen Greenwood and of marked improvement in vision of the left eye during the subsequent few weeks.

The refraction at this time was

Rt. eye +1.00 sphere and +50 cylinder at axis 90 = 6/6

Lt. eye +1.50 sphere = 6/6

No change was indicated in the slit lamp picture. Intraocular pressure was 22 mm. in each eye Schiötz.

In December 1932 the patient's vision was reported as better. The heart was normal to percussion but slightly large to x-ray. No sclerosis of the radial vessels was noted. Slight calcification was shown opposite the left ankle joint by x-ray and the x-ray of the chest still revealed shadows suspicious of tuberculosis. The blood pressure was 90/60, the blood cholesterol 203 mg., and the urinary sugar was found to be 0.2 per cent. The insulin dosage at this time was 52 units daily.

A study of the eyes by slit lamp revealed no changes from those noted at previous visits. The intraocular pressure was 25 mm. in each eye and the fundi normal.

In April 1933 with daily insulin therapy of 59 units the maximum blood sugar non-fasting was 360 mg per 100 cc. Blood cholesterol was 206 mg. urinary sugar 6.2 per cent.

The refraction was

Rt. eye +1.50 sphere = 6/6

Lt. eye +1.75 sphere = 6/7

There was no change in the slit lamp picture and the intraocular pressure was 22 mm. in each eye.

In July 1933 the heart size of the patient was found to be normal to percussion. The blood pressure was 110/70. The maximum blood sugar was 110 mg., NPN 23 mg. and blood cholesterol 182 mg. per 100 cc. The urine of the patient was sugar free. Insulin dosage was 55 units daily.

The patient's visual acuity was 6/6 minus in both eyes. The slit lamp findings were unchanged. The retinal vessels were normal and the intraocular pressure measured 22 mm. right and left.

Whether the incidence is 4 per cent or three times that figure the presence of bilateral slowly progressive lens opacities of the type noted in juvenile diabetes is a distinctly abnormal finding. Whether the opacities are the direct outgrowth of diabetic processes is another question, and one that cannot be solved without considerably more data than we possess at present. In our eleven patients with flocculi, there present a striking collection of abnormalities of body and of eye. All of them are severe diabetics with

heavy insulin requirements, and with wide and precipitate shifts in blood sugar. Three of them have had coma, one fatally. Six of the eleven present evidence of endocrine disturbance apart from diabetes. Three of the eleven had a blood NPN above 39 mg per 100 cc, and one had a blood cholesterol over 229 mg per 100 cc. Nine of the eleven had demonstrable sclerosis of peripheral or of retinal vessels, and one had a blood pressure of 160 systolic, and 100 diastolic. One must not forget that opacities of the flocculi type have been found in endocrine disorders, notably in parathyroid tetany, scleroderma, and myotonic dystrophy. It would seem desirable, therefore, to withhold judgment about the real etiology of flocculi cataracts until sufficient

## NUCLEAR CHANGES

	4001 Eyes of Dia- betics	%	914 Eyes of Non- Dia- betics	%
<i>Embryonic and Fetal Nucleus</i>				
Clusters between Y's	464	11%	250	27%
Dust between Y's	103	2%	46	5%
Y suture opacities	7		0	
<i>Zonular Cataract</i>				
	2		0	
<i>Adult Nucleus</i>				
Dots outside Y's	157	4%	60	6%
Mild sclerosis	761	19%	211	23%
Sclerosis	109	2%	6	
Protuberances	46	1%	6	

## FLOCCULI

## (BILATERAL CORTICAL OPACITIES IN JUVENILE DIABETICS)

Age	Yrs Dur DM	Amt Ins	Co- ma	In- fec- tions	Per Ves	Ret Ves	Bld Scl	Max NPN	Max Chol	Calc	Phos	En- do- crine	Ret- in- itis	Comp Cat	Op- era- tions
S B 12	1 7	29 59	0	TB?	X	0	360 60	/36	206	11 0	4 3	0	0	no	no
O C 18	1 0	36 51	0	0	0	R	520 40	41	362	10 8	3 4	T —16	0	yes	yes
C F 13	2 3	26 54	0	0	0	R	320 80	32	214	10 3	3 6	0	0	yes	yes
M M 23	7 0	62 65	4x	TB Carb	X	R	330 80	39	202	9 8	3 8	T?	R	yes	yes
J L 27	5 5	44	0	0	R	0	250 40	42	192	9 8	3 4	P?	0	yes	yes
W G 18	5 0	34 52	1x	TB Carb	0	0	710 80	37	208	9 8	3 7	0	0	yes	yes
E S 27	7 5	24 34	0	0	R	0	360 30	35	132	-	-	0	0	yes	yes
J S 16	8 5	24	0	0	0	R	380 60	38	-	11 2	4 3	P	R	no	no
E T 16	3 0	42	0	0	R	R	180 80	29	200	10 4	3 8	0	0	yes	no
E W 13	2 5	27 54	0	0	R	0	270 50	33	185	11 1	2 0	P	0	yes	no
R Y 15	6 0	53	1x	Death	0	0	320 70	32	-	-	-	T +26	0	no	Death

data are forthcoming about lens physiology-pathology.

## VIII-B-3 Nuclear Changes

Nuclear lens changes will be considered in three categories, following the lens architecture revealed by the slit-lamp method: opacities of the embryonic and fetal nucleus, zonular cataract, and opacities of the adult nucleus.

Nuclear lens opacities in either diabetic or non-diabetic groups would seem to throw no light upon the rôle diabetes may play in the production of cataract, because opacities of this

type are usually laid down before birth. Zonular cataract was found only twice, and it merits no discussion here. Opacities of the adult nucleus are related to the uniformity and degree of sclerosis, in which there seems to be no outstanding difference in the two groups.

## VIII-B-4 Miscellaneous Lens Changes

Under miscellaneous changes in the lens will be considered

- a Capsular opacities
- b Coronary opacities
- c Aphakia

MISCELLANEOUS LENS CHANGES				
	4001 Eyes	%	914 Eyes	%
	of Dia-	of Non	Dia-	betics
Anterior Capsule				
Congenital pigment deposits	50			
Anterior capsular cataract	10			
Exfoliation zonular lamella	3			
Posterior Capsule				
Hyaloid remnants	39			
Coronary Opacities	513	13%	168	18%
Aphakia				
(40 cataracts extracted subsequent to examination, therefore not counted here)	22		7	

We wish to enter miscellaneous lens opacities for record only, and we do not wish to imply that there is any relationship between such opacities and diabetes.

## IX. THE VITREOUS

The following vitreous abnormalities were found

### VITREOUS ABNORMALITIES

	3407 Eyes of Diabetics Over 20 Years Old	914 Eyes of Non Diabetics Over 20 Years Old
Vitreous { few opacities { many	185 584	17% 128
Retinitis proliferans, Pre-retinal hemorrhage (31 patients)	399	14%
Vitreous hemorrhage	8	1
Asteroid hyalitis	5	0

A most interesting group is to be found in thirty-one diabetics showing forty nine eyes with pre retinal hemorrhages or with proliferation of vessels and connective tissue in retina and vitreous. The age distribution of this group was as follows:

40-49 years—	5 patients
50-59 years—	16 patients
60-69 years—	10 patients
31 total	

In eighty three per cent of this group, the retinal arteries were graded No 3 or over, and the retinal veins showed conspicuous changes suggesting an etiological rôle. In ninety per cent of this group there was one or more of the following findings:

Systolic pressure over 160 mm—	19 patients
Diastolic pressure over 90 mm.—	15 patients
Enlarged heart—	20 patients
Angina-coronary disease—	5 patients
NPN above 40 mg per 100 cc.—	19 patients
Albuminuria—	20 patients
Phthalalin excretion under 30%—	9 patients
Gangrene—	5 patients

Thus it would seem that this group is derived from diabetic patients with cardio-vascular-renal complications, and with outspoken disease of the retinal vascular tree.

The part played by diabetes alone in this group seems to be trivial. Only twenty nine per cent of this group showed fasting blood sugar over 250 mg per 100 cc. Ninety three per cent of the insulin treated group received an average daily dose of insulin of 17 units, and twenty-nine per cent of the entire group received no insulin whatever.

This group is characterized also by the frequency of pupillary abnormalities. Of the forty nine eyes listed, fourteen eyes showed pupils which presented sluggish response to light failed to respond to light, or failed to dilate normally with mydriatics. In none of the fourteen eyes could any obvious reason be found by slit lamp for abnormal pupillary behavior. All fourteen eyes showed good light perception and half of them attained a corrected visual acuity of 6/12 or better.

In our experience the prognosis for sight in this group is uniformly poor, because, in spite of the best diabetic handling, hemorrhages tend to recur spontaneously and to organize. In one of these patients, we were able to observe the development of a progressive retinal detachment brought about by contraction of proliferated tissue in the vitreous. Eyes of this type are exceedingly poor surgical risks. We cannot agree with Grafe<sup>11</sup> that insulin predisposes to hemorrhage in eyes of this type, and we suspect that large doses of potassium iodide may be distinctly harmful in eyes with such badly diseased vessel walls.

## X. THE RETINA

The following chief retinal abnormalities were found

### RETINAL ABNORMALITIES

	Diabetics In 3315	Non Diabetics In 101
	Visible Fundus	Visible Fundus
Deep Retinal Hemorrhages	730 18.8%	34 3%
Waxy Exudates	470 10.7%	7 7%
Nerve Fiber Layer Hemorrhages	196 5.0%	33 3%
Cotton Wool Exudates	168 4.3%	35 3%
Iridescent Crystals	.8 0.7%	4
Proliferation of Capillaries in Retina	26 0.7%	

Since the time of Jaeger, there has been no dispute about the frequency of deep retinal hemorrhages and associated waxy exudates in the retinae of diabetics past middle age, but there has been much discussion about causes of these retinal changes. Proof of causation of deep retinal hemorrhages requires more than observed association with hypertension or arteriosclerosis. We may no longer think of parallelism between the hydrodynamics within the larger vessels and the hydrodynamics within the capillaries, because the capillaries are subject to separate and purposive control. The observed abnormalities in the walls of the larger retinal vessels should no longer be cited to explain the origin of the deep retinal hemorrhages, because all evidence points to the capillaries as the source of these hemorrhages. To explain the source of deep retinal hemorrhages, we should seek more information about the physiology and pathology of the retinal capillaries, about their normal and abnormal hydrodynamics, about glycogen deposits which are known to affect other ocular tissues, about the normal and abnormal permeability of capillary walls, about thromboses which may form within them, and about toxins which may affect them adversely. Until this knowledge is forthcoming, either from clinical studies or from the study of laboratory animals, we can form no valid opinion about the source of deep retinal hemorrhages in diabetics.

Consequently, we have made no attempt to classify types of retinitis in diabetics, types which merge into one another, and types which permit of no clear-cut interpretation in terms of the visible retinal vascular tree.

For our purposes, we have been content to seek diligently and to record the retinal abnormalities to be found in diabetics and non-diabetics, so that correlation might be attempted with various factors commonly incriminated. To this end examination of each fundus was made with dilated pupil by two observers working independently. In two-thirds of our cases, the hemorrhages were sufficiently numerous so that it is difficult to conceive of overlooking them. In one-third of our cases, the hemorrhages were so few that a careful and tireless search was required to find them. Herein probably lies the explanation of the incidence of deep retinal hemorrhages of eighteen per cent in 2002 diabetics here reported, as contrasted with hemorrhage incidence in other large diabetic series (Spalding & Curtis 5 per cent, McKee 6 per cent, Mayo Clinic 9 per cent, Gray 11 per cent).

It would seem desirable to present our analyses of deep retinal hemorrhages according to the following scheme:

- Deep retinal hemorrhages in relation to age
- Deep retinal hemorrhages in relation to sclerosis of retinal vessels

- Deep retinal hemorrhages in relation to hypertension.
- Deep retinal hemorrhages in relation to renal disease
- Deep retinal hemorrhages in relation to duration of diabetes
- Deep retinal hemorrhages in relation to insulin
- Deep retinal hemorrhages in relation to blood calcium
- Deep retinal hemorrhages in relation to blood sugar

#### X—1—a. Incidence of Deep Retinal Hemorrhage By Age

#### DEEP RETINAL HEMORRHAGES—IN RELATION TO AGE

Age Group	Diabetics			Non-Diabetics		
	Visible Fundi	Both Eyes	% of Fundi	Visible Fundi	Both Eyes	Visible Fundi
	Fundi	Deep Hems	Visible	Fundi	Deep Hems	Visible
Under 10	130	0				
10-19	464	4	8%			
20-29	279	10	3 2%			0 20
30-39	315	17	5 4%	4 6%	6	129
40-49	514	75	14 5%	2 6%	8	305
50-59	1006	282	28 0%	6 1%	14	229
60-69	966	270	28 0%	3 6%	6	164
70 up	241	72	30 0%		0	54
	3915	730	18 0%	3 0%	34	901

This table shows strikingly that deep retinal hemorrhages are rare in the younger diabetics, however severe the diabetes may be, and that they become more and more frequent in older diabetics. Plate X. The average age for all diabetics with deep retinal hemorrhages was fifty-eight years. Of deep retinal hemorrhages found in 730 diabetics, only four per cent were found in patients under forty years old, ten per cent were found in patients from forty to fifty years old, and eighty-six per cent were found in patients over fifty years old.

#### X—1—b Deep Retinal Hemorrhages In Relation to Sclerosis of Retinal Arteries

Two types of sclerosis have been found histologically in retinal arteries. In the larger vessels on the disc, the atheromatous type of change involving the endothelium is the rule, and it may lead to occlusion of the affected vessel. In the smaller retinal branches, which contain no elastic lamina, the more common type of sclerosis is the hyalin thickening of the media (Monckeberg), without complete obliteration of the lumen. It is very difficult to differentiate the two histological types by clinical methods. At the arteriovenous crossings, both artery and vein may be involved in the common sclerotic process, as Friedenwald<sup>30</sup> has pointed out.

For clinical purposes, it has seemed desirable to grade all retinal arteries according to the following scheme:

Grade 0—no abnormalities

Grade 1—increased light reflexes

Grade 2—prominent light reflexes

slight loss of transparency of vessel walls  
slight arteriovenous compressionGrade 3—moderate loss transparency of vessel walls  
moderate arteriovenous compression  
irregularity in caliber of vesselsGrade 4—arterial walls opaque  
sheathing of vessels  
obstruction of lumen

The grade given to 3893 retinal arterial trees of diabetics is shown in the following tabulation with an average sclerosis indicated for each decade of age.

We were unable to demonstrate conclusively

RETINAL VS RADIAL ARTERIOSCLEROSIS  
IN DIABETICS

Clinical Grade of Sclerosis	Radial Vessels* Rt. Only	%	Retinal Vessels† Rt. & Lt.	%
No 0	456	24%	1042	26%
No 1	493	27%	905	23%
No 2	677	37%	1294	33%
No 3	166	9%	595	15%
No 4	33	1.8%	67	1.4%
	1829		3893	
Unrecorded	173		103	
	2002		4001	
			3 anophthalmos	

Rating by Joslin group.

Rating by White and Beetham.

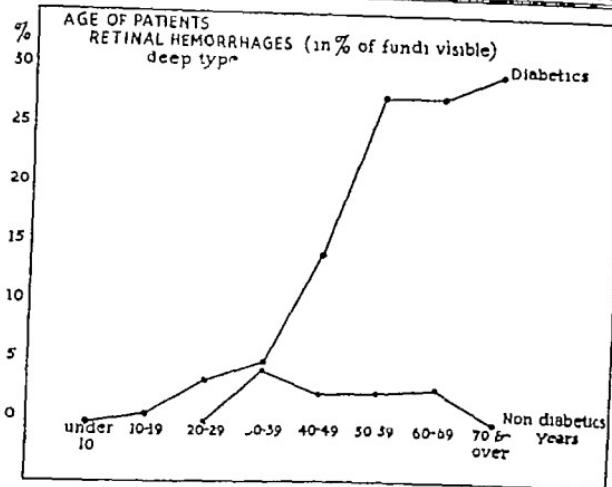


PLATE XI.

## SCLEROSIS OF RETINAL ARTERIES IN DIABETICS BY AGE DECADES

Grade of Sclerosis	130 Under 10	464 10-19	274 20-29	315 30-39	513 40-49	1001 50-59	957 60-69	240 Over 70	3893
No 0	130 100%	451 97%	258 92%	153 48%	49 9%	6 8%			1012 26%
No 1		11 2%	18 4%	130 41%	260 51%	323 32%	150 16%	19 8%	905 23%
No 2		3 4%	8 3%	30 10%	177 31%	468 46%	508 53%	111 46%	1294 33%
No 3				20 0%	196 4%	276 19%	101 3%		595 15%
No 4					6 0%	19 4%	23 3%	9 4%	67 1.4%

any preponderant sclerosis of retinal arteries in diabetics, over those of non-diabetics of this series. We consider that isolated instances fail to prove the contention.

While the grade of sclerosis given by us to retinal arteries of diabetics shows striking parallelism to that given by the Joslin group for radial arteries, as shown in the table above,

and in Plate XI, there were patients in whom no such correlation existed. In these patients, sclerosis is capricious and manifests itself markedly in some vessels, and spares others.

The number of deep retinal hemorrhages tabulated against the degree of sclerosis found in 1944 right eyes of diabetics are shown in the following table.

DEEP RETINAL HEMORRHAGES AND SCLEROSIS  
RETINAL ARTERIES IN DIABETICS

Grade of Sclerosis of Retinal Vessels	Right Eyes Diabetics	Right Eyes Hemor- rhages	%
No 0	519	1	
No 1	460	49	10%
No 2	638	165	25%
No 3	299	133	44%
No 4	28	22	79%
	1944	370	

## X—1—c Deep Retinal Hemorrhages in Relation to Arterial Hypertension

Deep retinal hemorrhages were found in 730 eyes of the 372 diabetics of this series. Systolic arterial pressures were recorded in 369 of these patients, and diastolic pressures in 366. In the patients with pressures recorded, Plates XII and XIII show that deep retinal hemorrhages were present in fifty-four per cent of the diabetics that had a systolic pressure under 160 mm mercury, and in sixty-two per cent of the diabetics that had a diastolic under 90 mm.

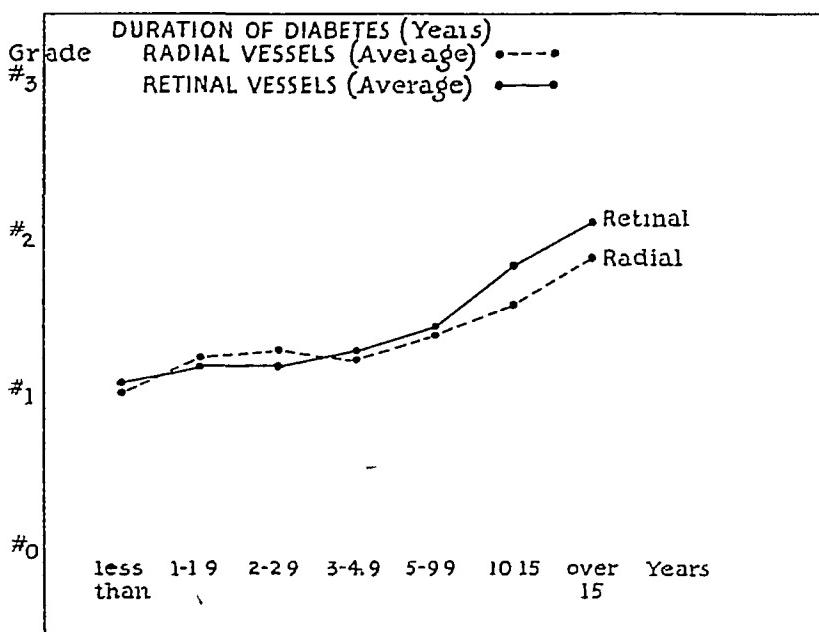


PLATE XI.

While hemorrhages seem to increase with high grades of sclerosis in the larger retinal vessels, it does not follow that such vascular sclerosis causes the hemorrhages. One must consider in this connection the unescapable increase in age of patients, with tissue senility and altered capillaries.

The relationship between retinal vessel sclerosis in diabetics, and abnormally high blood constituents is shown in the following table

mercury. Thus, considerably more than half of the hemorrhages occurred in patients with blood pressures falling within the normal and high normal range. Furthermore, if plotted by duration of diabetes according to Plate XIV, the curve for deep retinal hemorrhages does not follow the same trend as do the curves for systolic pressure over 160 mm mercury, or diastolic pressure over 90 mm mercury.

## X—1—d Deep Retinal Hemorrhages in Relation to Renal Disease

Tangible evidence of renal disease is nitrogen retention reflected in blood nonprotein nitrogen

BLOOD SUGAR, NPN, AND CHOLESTEROL  
AGAINST SCLEROSIS OF RETINAL  
VESSELS IN DIABETICS

Grade Sclerosis Retinal Vessels	Blood NPN Over 44 mg	Blood Cholest Over 230 mg	Blood Sugar Over 300 Fasting Over 400 Non-Fasting
No 0	12	35	118
No 1	11	13	57
No 2	29	19	63
No 3	18	4	27
No 4	2	0	1
	72	71	266

Diabetics with vessels recorded, and blood constituents recorded

DEEP RETINAL HEMORRHAGES AND  
BLOOD NPN IN DIABETICS

NPN	Diab- etics with Deep Ret Hems	%
Less than 35 mg	877	161
35-39 mg	450	85
40-44 mg	180	50
45-50 mg	56	14
Above 50 mg	20	6
	1583	316

analyses. Nonprotein nitrogen determinations were made from the blood in 316 of the 372 diabetics with deep retinal hemorrhages, and in 1583 of the 2002 total diabetics.

Of the 316 diabetics with deep retinal hemorrhages and NPN determinations, only twenty (6 per cent) showed values over 44 mg blood

similarly plotted, there is no obvious analogy Plate XV

X-1.-e. Deep Retinal Hemorrhages in Relation to Duration of Diabetes

Plate I and Plate II reflect our reasons for believing that diabetes is more severe during

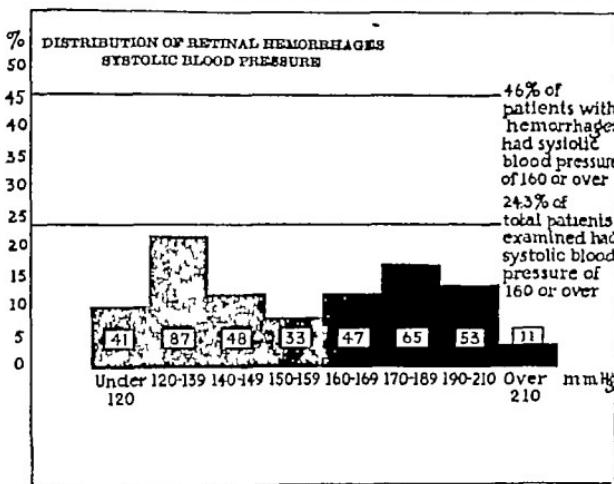


PLATE XII.

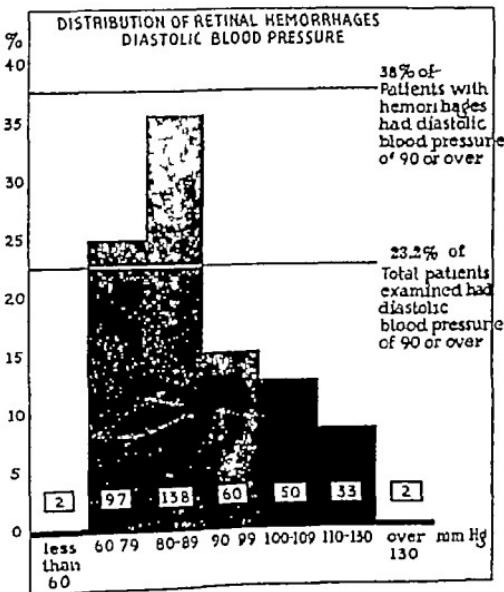


PLATE XIII.

NPN per hundred cubic centimeters of blood. If the first three decades of life, the blood sugar blood NPN be plotted according to duration of diabetes, and deep retinal hemorrhages be sum

levels are consistently higher, and the insulin requirements are consistently greater than at any

other time in life. The deep retinal hemorrhage situation is just the reverse. During the first three decades of life of the diabetics in this series, deep retinal hemorrhages were found in only two per cent of the total eyes or in fourteen eyes of 730 with hemorrhages. As the diabetes grows milder with each increasing decade, the hemorrhages become more numerous.

There is with increasing duration of diabetes an increasing incidence of deep retinal hemorrhage, out of proportion to the accompanying increase in the age of the patient as reflected in the average for each group. Plate XVI.

Insulin has repeatedly been named as a potential cause for retinal hemorrhage in diabetics. If we sort the diabetic material on the

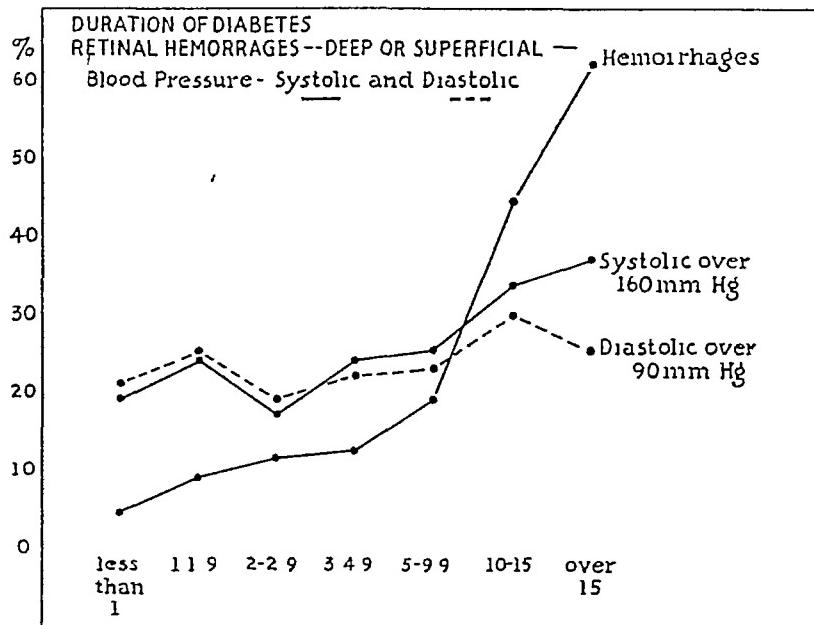


PLATE XIV

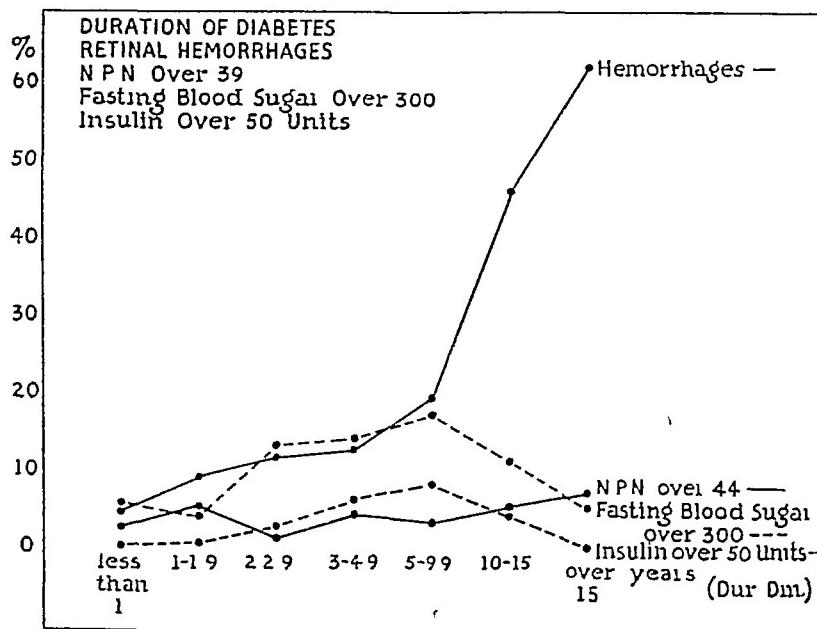


PLATE XV

## RETINA OF DIABETICS—DEEP RETINAL HEMORRHAGES—DURATION DIABETES

3915 Fundi Visible	993	448	370	549	935	403	217
Duration Diabetes	1 yr	1-1.9	2-2.9	3-4.9	5-9.9	10-15	Over 15
Deep Hemorrhages	57	48	44	76	192	185	128=730
Average Age	40	45	45	45	41	55	62
	5.7%	10.7%	11.8%	13.8%	20.5%	43.1%	58.9%

## X-1-f. Deep Retinal Hemorrhages in Relation to Insulin Fundi Visible

DEEP RETINAL HEMORRHAGES IN RELATION TO INSULIN FUNDI VISIBLE						
Age	% Fundus Visible	Total Diab. Eyes	Insulin Fundus Visible	Deep Retinal Hemor. rhages	% Hem. rhages	
56	19%	878	None	133	18%	
54	24%	978	114	238	32%	
47	18%	1339	15-29	242	33%	
37	14%	739	30-50	105	14%	
26	7%	181	50 up	13	3%	
		3915		730		

diabetics received blood calcium (total) determinations, and the results were as follows

Age of Group	Total Blood Calcium 11.4 mg. per cent
10-19	9.4
30-39	8.3
40-49	10.7
50-59	10.4
60-69	11.0
60-69	10.0
60-69	11.3
70-79	9.8

Thus, only one patient in nine fell below what is commonly considered normal blood calcium value.

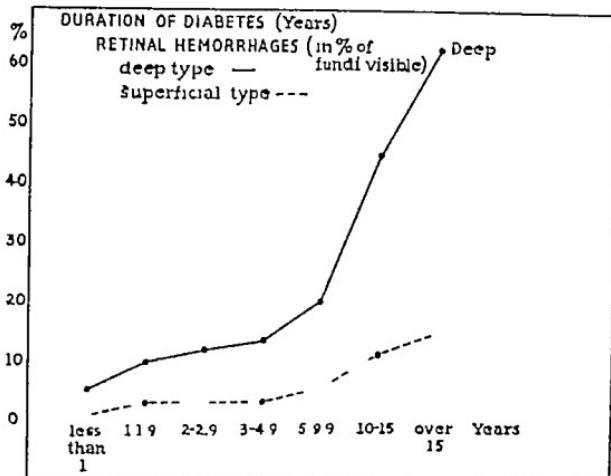


PLATE XVI

basis of daily insulin dosage of 50 units or over, we find included ninety two of the 2002 diabetics (4 1/2 per cent), and thirteen of the 730 deep hemorrhage eyes (1 3/4 per cent). From the standpoint of retinal hemorrhage in this diabetic group, our experience would indicate the only danger from insulin to be in withholding it. Plate XV

## X-1-g. Deep Retinal Hemorrhages in Relation to Blood Calcium

Reduced blood calcium has been advanced as a possible contributing factor in the production of retinal hemorrhages by Cammidge<sup>1</sup> and later by Lawrence<sup>2</sup>. Since Cammidge represented the normal blood calcium as 6 mg per cent, he must have referred to the diffusible calcium. In this country, it is the feeling that more accurate methods exist for total blood calcium, which has for normal value a magnitude of 9.10 mg per cent.

Nine of the deep retinal hemorrhage cases in

## X-1-h. Deep Retinal Hemorrhages in Relation to Blood Sugar

Total Diabetics Bld Sugar Recorded	Maximum Fasting B S	Deep Retinal Hemorrhages Right Eye	%
280	Under 140	33	13%
216	140-169	39	16%
242	170-199	51	31%
405	200-249	97	23%
242	250-299	59	4%
167	300-400	20	12%
24	Over 400	2	8%
1606		306	

The highest incidence of deep retinal hemorrhages does not fall in the low or in the high fasting blood sugar groups, but in the intermediate groups, as shown in the above table. Of the 306 deep retinal hemorrhages, right eye, only twenty two (7 per cent) occurred in pa-

tients with a maximum fasting blood sugar over 300 mg. If deep retinal hemorrhages be plotted against fasting blood sugar over 300 mg per 100 cc., there is no obvious correlation

## Plate XV

## X—2 Waxy Exudates

Waxy exudates in the retina occurred as follows

Age Group	WAXY EXUDATES			Non-Diabetics		
	Diabetics	Fun- di Vis- ible	Waxy Exu- dates	%	Non-Diabetics	%
Under 10	130	0				
10-19	464	2	4%			
20-29	274	4	1.4%	10.0%	2	20
30-39	315	1	3%	8%	1	129
40-49	512	42	8.2%	1.0%	3	305
50-59	1001	160	16.0%	4%	1	229
60-69	957	165	17.2%	0	0	164
70 up	240	46	19.2%	0	54	
	3893	420		7	901	
Fundi not seen	108			not seen	13	
	4001				914	

If waxy exudates in diabetics are plotted according to the duration of diabetes, we obtain a curve with the same trend obtained in the deep retinal hemorrhage curve, except that it

incidence curves of deep hemorrhages and waxy exudates, would seem to indicate that waxy exudates may arise through hyalinization of deep retinal hemorrhages

## X—3 Nerve Fiber Layer Hemorrhages

Nerve fiber layer hemorrhages have about the same incidence in diabetics (5 per cent) as in non-diabetics (4 per cent). In our series, nerve fiber layer hemorrhages were found in 196 of 3893 diabetic eyes, and in thirty-three of 901 non-diabetic eyes, in which the fundi were visible. Of the 196 nerve fiber layer hemorrhages in diabetics, thirty-four of them occurred alone, and 162 times they were found in conjunction with deep retinal hemorrhages

Age Group	NERVE FIBER LAYER HEMORRHAGES BY AGE DECADES		
	Diabetics	Non-Diabetics	
Under 10	130		
10-19	464	2	4%
20-29	274	6	2.1%
30-39	315	7	2.2%
40-49	512	19	3.7%
50-59	1001	56	5.6%
60-69	957	80	8.4%
70 up	240	26	10.8%
	3893	196	
			33 901

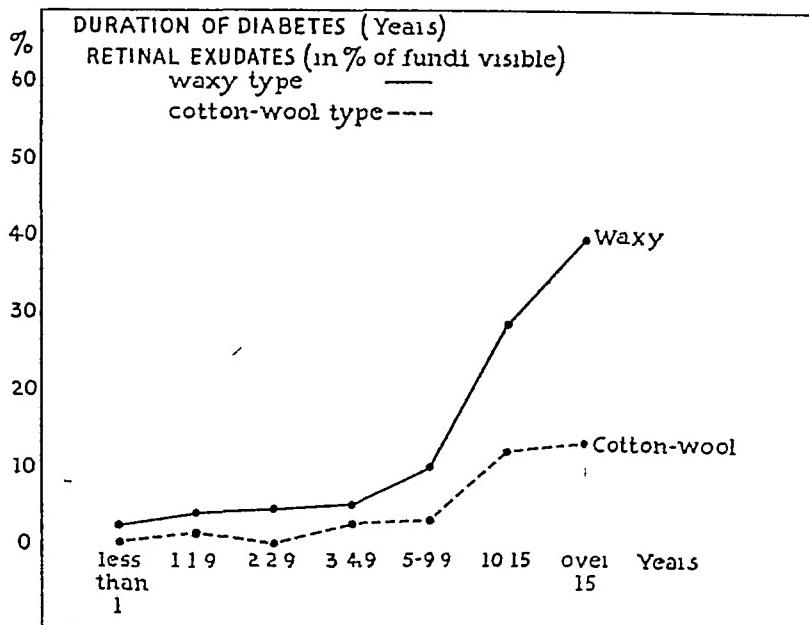


PLATE XVII.

does not reach the same altitude, Plate XVII. The greater frequency of waxy exudates in the macular and perimacular area where deep hemorrhages are more numerous, the location of waxy exudates histologically, and the similarity of the

Analysis of the clinical and blood chemical findings reveals no conspicuous abnormality in association with nerve fiber layer hemorrhages. The high incidence in non-diabetics under forty years of age is to be accounted for in the fact

that all hemorrhages listed occurred in cases of hypertension, nephritis, rheumatic heart disease, or hyperparathyroidism.

#### X.—4. Cotton Wool Exudates

Cotton wool exudates were found with the following frequency

##### COTTON WOOL EXUDATES BY AGE

Age Group	Diabetics			Non Diabetics		
	Fun	C-W	%	%	C-W	Fun
	di	Exu	Vls- ible	Exu	di	Vls- ible
Under 10	130	0				
10-19	484	1	.2%			
20-29	274	3	1.1%	10.0%	2	.2%
30-39	315	5	1.5%	7.0%	9	1.2%
40-49	512	19	3.7%	5.5%	17	.8%
50-59	1001	50	5.0%	2.8%	6	.2%
60-69	957	71	7.4%	6%	1	.1%
70 up	240	19	7.9%		0	.5%
	3893	168			35	9.01
Fundi not seen	108			not seen	13	
	4001				914	

Cotton wool exudates show a rising incidence in the diabetics of our series, rising from zero to nearly eight per cent progressively through the decades of age and a falling incidence in the non-diabetics, falling from ten per cent in the third decade to zero in the eighth decade. Of the 168 eyes of diabetics showing cotton wool exudates, seventy patients had NPN recorded as follows

NPN	Cotton Wool Exudates
Under 35	34
36-39	22
40-44	8
45-50	5
Over 50	1
	70

#### X.—5. Miscellaneous Fundus Abnormalities

	Dia betics	Non Diabetics
	3915	901
	Vls- ible	Vls- ible
Drusen in fundus	386	188
Degenerations	295	81
Conus	151	26
Iridescent crystals	8	4
Atrophy optic nerve	27	4
Proliferated capillaries in retina	26	9
Detached retina	16	1
Striate retinitis	1	5
Cupped disc	3	3
Opaque nerve fibers	7	1

Miscellaneous fundus abnormalities in diabetics and non diabetics are listed here for record. Except for the proliferated vessels in the retina, and detachment of the retina consistent with retinitis proliferans, none of these miscellaneous abnormalities bear direct relationship to diabetes.

Striate retinitis may be a misnomer, for it refers to the deep striae seen best with scatter light, and located beneath the retina in the level of the retinal pigment epithelium. The oblique direction taken by the striae would suggest as a possible cause the traction lines resulting from the pull of the superior and inferior oblique muscles.

#### XI. THE OPTIC TRACTS

##### ABNORMALITIES OF THE OPTIC TRACTS

4001	914
Eyes	Eyes
Dia	Non
betics	Dlab

Sector defects*	48
Homonymous hemianopsia*	24
Toxic amblyopia	14

Fields recorded 3782 eyes of diabetics.

The maximum visual acuity with correcting lenses was recorded in 3980 of the 4001 eyes of diabetics. Unilateral anophthalmos was present in three diabetics. The corrected visual acuity was as follows

	Rt. Eye	Lt. Eye
6/6 or better	1506	1503
6/7 and 6/9	247	240
6/12 and 6/20	135	134
6/30 and 6/60	41	49
less than 6/60	59	66
unrecorded	11	10
anophthalmos	3	
	2002	2002

In 3782 of the eyes of diabetics visual fields were recorded with the aid of perimeter and tangent screen. Sector defects were found in forty-eight eyes, and attributed to blocking of one of the main retinal vessels, to local detachments of the retina, and to glaucoma.

Homonymous hemianopsia was found in twelve diabetics (twenty four eyes) and was attributed to hemorrhage, vascular block, or tumor behind the chiasm.

Toxic amblyopia was found in fourteen eyes of seven of the diabetic patients of this series, all of the affected patients being males, all past the fifty second year of age, and all showing sclerosis of retinal vessels of grade No 2 or higher. The corrected visual acuity of the affected eyes ranged from 6/12 to 1/60 at the onset, and the visual field of each eye exhibited scotomata connecting with the blind

**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES****EDITED BY RICHARD C CABOT, M.D****CASE 21101****PRESENTATION OF CASE**

*First Admission* A thirty year old Canadian electric worker entered complaining of shortness of breath and cough of two months' duration

Five months before entry he began to have many colds, noticed that he tired very easily and that he had some shortness of breath. At about the same time he had painless swelling in the left side of the neck which was not associated with sore throat and which subsided in about three weeks. He also noticed slight swelling of his face. About two months before entry the shortness of breath became worse and he developed a cough, more marked in the morning, with the production of about a teaspoonful to a quarter of a glass of greenish-yellow sputum without blood. He also had recurrent, sharp, stabbing, occasionally dull persistent pain in the left posterior chest, just medial to the scapula, which occasionally radiated to the right side. This pain was not worse upon coughing or deep breathing. He found that he could sleep better lying on his left side. These symptoms continued and about one month before entry he developed upper abdominal cramps severe enough to wake him at night. He also had a pressure feeling in his upper abdomen which was relieved by belching. He gradually became constipated and occasionally somewhat nauseated. During the past two weeks he had a swelling in the left anterior chest. His dyspnea became more marked and he was forced to use two pillows at night. There was no peripheral edema. He lost fifteen pounds during this illness. There had been no previous cough, pleurisy, chills or fever.

His family, marital and past histories are non-contributory.

Physical examination showed a well-developed and nourished man unable to lie flat in bed because of marked dyspnea. He had a harsh non-productive cough. There were scratch marks over the chest and excoriations of the legs. His pharynx was red. There were two large, hard, movable slightly tender supraclavicular glands three by two centimeters on the left. There were two smaller glands in the left axilla. In

the region of the second and third ribs along the left sternal border was a diffuse, slightly tender, non-pulsating swelling four by three centimeters over which the skin was reddened. The left chest revealed dullness both anteriorly and posteriorly at the base with diminished voice and breath sounds, normal tactile fremitus and some medium moist râles. In the anterior axillary line at about the fifth interspace was an area of bronchial breathing, crepitant râles and egophony. No Grocco's triangle could be demonstrated. The neck and arm veins were distended while sitting. There was a large tortuous vein just to the left of the umbilicus, extending from xiphoid to pubis. The heart was not enlarged. One observer felt that the heart was slightly displaced to the right. The trachea was in the midline. The blood pressure was 140/86. The abdomen was distended, held tight, and was tympanitic. The right upper quadrant felt fuller than normal and was tender.

The temperature was 98.4°, the pulse 90. The respirations were 20.

Examination of the urine was negative. The blood showed a red cell count of 4,890,000, with a hemoglobin of 70 per cent. The white cell count was 9,000, 67 per cent polymorphonuclears. A smear was not remarkable. Two sputum examinations showed a few streptococci, a moderate amount of mucus, but no acid-fast bacilli. The stools were negative. A Hinton test was negative. The non-protein nitrogen of the blood was 46 milligrams. A tuberculin test 1:10,000 showed a very slight erythema at the end of forty-eight hours.

X-ray examination showed marked increase in the mediastinal shadow, due to irregular dullness, extending out to both hilus regions and obscuring the outlines of the heart. The borders of dullness were irregular in outline. There were also several patches of mottling in the periphery of the right lung field. The lower portion of the left lung field was obscured by homogeneous dullness which arose in the axillary line. The diaphragm on the right was low in position. The costophrenic angle was obliterated by a thin band of dullness which arose along the axillary line. The diaphragm on the right was low in position. The costophrenic angle was obliterated by a thin band of dullness which arose along the axilla.

On the fourth day a biopsy of an axillary gland was done. X-ray treatment was begun that day. Two days later a paracentesis of the left pleural cavity was done with the aspiration of 35 cubic centimeters of light yellow, slightly cloudy fluid which formed a very slight clot after standing. The fluid had a specific gravity of 1.020, with 7,500 white blood cells, 100 per cent lymphocytes and 2,200 red blood cells. The total protein was 4.3 per cent. A culture showed

no growth. The biopsy was reported as reticular hyperplasia.

On the fourteenth day he complained of considerable pain in his back. At this time he developed mild jaundice. He was discharged on the nineteenth day, following a course of x ray treatment during which the swelling of his chest subsided.

#### Second Admission Two weeks later

For the first few days after discharge he felt somewhat improved, had more interest in things about him and craved sweets. His jaundice continued and itching of the skin became quite marked. During the ten days before entry he began to lose his appetite and strength. He had several periods of shortness of breath which were relieved somewhat by his physician's medication. During the two days before admission he had marked difficulty in swallowing and remained in bed.

He was admitted for further x ray treatment. Examination showed a markedly emaciated, sick, jaundiced, drowsy man sitting propped up in bed. The sclerae were icteric, the skin showed many excoriations. There were hard, non tender, enlarged glands in the left anterior and posterior cervical regions and in the left suprasternal region. The left chest was flat anteriorly and posteriorly from the fifth rib down. In addition there were decreased tactile fremitus, breath and voice sounds and egophony. The abdomen was rigid and could not be palpated. The splenic dullness was increased. He died on the day of admission.

#### DIFFERENTIAL DIAGNOSIS

DR. WALTER BAUER "He had painless swelling in the left side of his neck which was not associated with sore throat and which subsided in about three weeks." This might well have been swollen lymph nodes, or a tumor of the neck. I personally believe that it was swollen lymph nodes.

"He also noticed slight swelling of his face." It does not say whether it was unilateral or bilateral. I do not know that it makes much difference.

"About two months before entry the shortness of breath became worse and he developed a cough, raising about a teaspoonful to a quarter of a glass of greenish yellow sputum without blood." I do not know which was the more frequent, a teaspoonful or a quarter of a glass of greenish yellow sputum. From that sentence alone it is difficult to say whether he had an irritative or a productive cough.

This pain was not increased by coughing or deep breathing but he did find that he could sleep more comfortably on the left side. Therefore, I feel a little more inclined to interpret this pain as being pleural pain rather than due to some other cause.

"These symptoms continued and about one month before entry he developed upper abdominal cramps severe enough to wake him at night." In other words that was a real complaint because it did wake him out of a sound sleep.

"He gradually became constipated and occasionally somewhat nauseated." All I can say from the above is that something was going on within the abdomen as well as elsewhere and whether that represented true intrinsic intestinal disease or not is a question.

"There had been no previous cough, pleurisy, chills or fever." In other words there was nothing to suggest that this was a flare-up of some previous chronic infection like tuberculosis.

From the history I think it is evident that we are dealing with a man who has upper mediastinal obstruction and in addition something in his abdomen. I think it is better for us to say that they probably are related. The only question is whether the abdominal symptoms are due to actual intrinsic intestinal disease or disease in the abdomen outside of the gastrointestinal tract.

"There were scratch marks over the chest and excoriations of the legs." Those, I think, are of significance. There is nothing said in the history about pruritus. We have evidence here that the man had a very definite pruritus as shown by the telltale marks found on physical examination, and these, with the previous history should make us very suspicious of the most likely final diagnosis.

The chest signs, with the normal tactile fremitus and the other findings, we could interpret as being due to thickened pleura or partial collapse. In view of the previous history I should be inclined to think it means a thickened pleura.

"No Grocco's triangle could be demonstrated." In other words the physical examination is not consistent with a pleural effusion of any size. "The neck and arm veins were distended while sitting." Evidently he did have some interference with venous return when he assumed the sitting position.

In view of the laboratory findings we might question the amount and color of the sputum mentioned in the history. Nothing was found except a few streptococci.

"A tuberculin test 1 10 000 showed a very slight erythema at the end of forty-eight hours." I am unable to interpret this finding but I should be inclined to attach no significance to it.

From the history and physical examination I think it is obvious that we are dealing with a man who has a serious illness an illness proceeding at a fairly rapid rate. He lost fifteen pounds in a very short period of time. We have evidence of some enlargement of lymph nodes.

We have evidence of mediastinal obstruction and abdominal symptoms. He gave no history of pruritus but we find evidence of it on physical examination. Therefore, without going any farther I think we should be quite suspicious that the thing we are dealing with is one process giving all the symptoms and signs, and it is probably a malignant lymphoma.

#### X-RAY INTERPRETATION

DR A O HAMPTON He had two examinations, one before and one after x-ray treatment. This first one shows dullness at the left base which we interpreted as fluid. The right base shows fluid and there is this huge infiltrating mediastinal mass. There are numerous rather hazy areas of density scattered over both lungs. After treatment he shows definite improvement. The fluid at the left base has practically disappeared, but we have uncovered something in the region of that rib which may be in the lung, or disease of the rib.

#### DIFFERENTIAL DIAGNOSIS CONTINUED

DR BAUER We know that in the case of not only inguinal but also axillary lymph node biopsies the pathologist often returns a report of reticular hyperplasia or chronic inflammation. Therefore, if we can do a biopsy in some other region it is more likely to be of value.

I think that in this instance we are dealing with a man who has malignant lymphoma with widespread involvement. I think everything about the case is in keeping with this diagnosis. The only out is that this is the first time he has been exposed to x-ray therapy and although the mass on the chest wall diminished, he did not get such a satisfactory or lasting effect as we might expect. In view of his subsequently developing jaundice one wonders whether it was due to enlargement of lymph nodes with pressure on the bile duct or whether he had actual infiltration of the liver to such an extent as to cause jaundice. The fact that he had recurrent abdominal attacks could perfectly well be explained by an increase in size of intra-abdominal lymph nodes. I have no way of determining whether he did or did not have any actual involvement of the gastrointestinal tract wall. I think the other conditions that one would consider in the differential diagnosis would be those diseases in which one finds a generalized lymphadenopathy and an associated jaundice. I do not see that there is anything in the history or physical examination to point to such a diagnosis.

DR HUNTER Do we ever see itching marked enough to result in scratch marks in lymphosarcoma? I have never noticed it and I wonder if in this case it was not due to involvement of the kidney with resultant uremia.

DR TRACY B MALLORY He was subicteric when he first came in and he also was suburemic. He has a double possibility.

DR WILLIAM D SMITH I remember this man very well. I saw him at the time of his first admission. I have nothing to add. We thought it was probably a lymphoma.

#### CLINICAL DIAGNOSIS

Lymphoblastoma, ? type

#### DR WALTER BAUER'S DIAGNOSIS

Malignant lymphoma

#### ANATOMIC DIAGNOSES

Carcinoma of the pancreas with extension into the duodenum and with metastases to mediastinum, lungs, bronchial, mesenteric and retroperitoneal glands, adrenals, kidneys, liver and heart.

Pleuritis, acute, with effusion

Jaundice

Early biliary cirrhosis

#### PATHOLOGIC DISCUSSION

DR MALLORY When this patient finally came to autopsy the difficulty I think was to find the patient in the face of all the tumor that he had. The largest single mass of tumor was in the mediastinum. It surrounded all the great vessels, the trachea, had infiltrated the pericardium, and passed across it into the heart itself, which showed a good-sized area of tumor invasion. The lungs were full of metastatic nodules. Both kidneys and both adrenals were completely replaced by tumor, virtually no kidney tissue was left and practically no adrenal. The liver was relatively uninvolved, it had only one tumor nodule. The spleen was absolutely negative. The mesenteric and retroperitoneal glands were all very large and the pancreas was totally replaced by tumor. Histologically it is a very undifferentiated small cell tumor, but I think it is definitely epithelial in character and I have very little hesitation in classifying it as a primary carcinoma of the pancreas.

#### CASE 21102

#### PRESENTATION OF CASE

One month before entry the patient, a thirty-eight year old American housewife, first noticed the sudden onset of a non-productive cough. The cough was not accompanied by coryza, chest pain, or preceded by sinusitis. She gradually developed marked shortness of breath upon exertion but no edema or precordial pain. The cough, which was of a loud brassy quality, persisted steadily and was worse at night. She tried all kinds of medicines, including codein, without relief.

Her family and marital histories are non contributory.

She had hay fever every summer during July and August, but no asthma. Eight years before entry she had an appendectomy and seven years before entry a thyroidectomy for colloid goiter.

Physical examination showed a well-developed and nourished woman lying propped up in bed coughing frequently and spasmodically but raising no sputum. There was a soft mass about five centimeters in diameter in the right side of the neck at the end of an old thyroidectomy scar. The vocal cords were negative. There were diminished breath sounds and tactile fremitus at both apices and scattered rales throughout the rest of the chest. The heart was negative. The blood pressure was 120/60. Abdominal examination was negative. There were no enlarged peripheral glands.

The temperature was 98.6°, the pulse 95. The respirations were 23.

Examination of the urine was negative. The blood showed a red cell count of 5,100,000 with a hemoglobin of 90 per cent. The white cell count was 10,500, 58 per cent polymorphonuclears.

X-ray films of the chest brought in by the patient showed a large mass anterior to the trachea and extending from the episternal notch down to the level of the bifurcation of the trachea. The trachea was markedly displaced posteriorly and was reduced to about one third its normal diameter. The mass bulged more to the left than to the right, and its margins were fairly smooth. There was no evidence of cardiac enlargement or dilatation of the aorta.

#### DISCUSSION

DR. OLIVER COPE The account of the x-ray films brought in by the patient so narrows the diagnosis down that I shall do nothing but read the history, pass on to the x-rays and give the discussion afterward.

#### X-RAY INTERPRETATION

DR. GEORGE W. HOLMES This film shows a definite enlargement of the mediastinal shadow with displacement of the trachea to the right. The smaller films show the trachea a little better and confirm the compression and displacement of the trachea.

#### DIFFERENTIAL DIAGNOSIS

DR. COPE It is evident that we are dealing with a mass in the mediastinum and I think everything else in the history and the physical findings can be explained on that basis. The problem therefore is to determine as far as possible from the history, the physical findings and the laboratory data what the nature of that tumor is. We have an unproductive cough, which

is in favor of tumor. She had dyspnea on exertion, with no precordial pain. There is no mention of palpitation in the history, therefore I take it it was absent. From the fact that the man who wrote the history mentions no pre cordial pain I suspect that he was trying to limit it to some other organ than the heart. That might not necessarily be true, of course. Also, conversely, a tumor might involve part of a nerve root, giving an anginal like pain. There was no relief from the cough. I should think that was of considerable significance. The fact that it was worse at night I do not believe is of much significance. It does not say that the patient could not lie down. The physical examination says that the patient was propped up in bed, coughing none the less. I do not think these things are of much help. The chest signs, dullness, diminished breath sounds and rales throughout the rest of the chest I should think were consistent with a large tumor in the upper mediastinum. I do not think they alter the diagnosis or are of any significance in the differential diagnosis.

The blood counts show an increase of red cells for a woman. The hemoglobin of ninety per cent I suppose is Tallqvist. It is higher than normal. I suspect that had an oxygen tension been taken we would have found it low. The red cell and hemoglobin increase are an attempt on the part of the blood to raise its oxygen carrying capacity, which commonly occurs with tracheal obstruction. I do not believe we need to suppose it is due to dehydration or any other thing.

The question now comes as to what might be the nature of that tumor compressing the trachea. It is stated in the history that there is sudden onset of coughing. I wish we knew a little more about the details of the suddenness of that onset. If it had been truly sudden it might be that we are dealing with a hemorrhage into a tumor otherwise I do not explain it. Sudden onset is suggestive of a sudden increase in size in the tumor. The two things that might do it are hemorrhage and infection. And the history tries to tell us that there was no infection present at the time. The temperature is normal. No history of sinusitis or a coryza that would give us a lead to say thyroiditis or abscess rising perhaps from the trachea or esophagus, esophageal perforation or something of that sort.

There is no mention of a difficulty in swallowing and of course that is of primary importance in the diagnosis of a tumor in this position. I take it there was no difficulty in swallowing and therefore I shall have to say that it is unlikely that the esophagus was involved either by a primary tumor or by extension. Of course the x-ray tells us that the tumor is anterior with the trachea displaced posteriorly, but

that can happen in carcinomas arising in the esophagus, the larger bulk of the mass growing anteriorly and growing around the trachea, with tracheal compression. The absence of any difficulty in swallowing makes me omit the esophagus and think of something which would arise anteriorly to the trachea.

There are two other things in the physical examination that are of great importance. There is a mass in the right side of the neck near the old thyroidectomy scar. The larger bulk of the mass in the mediastinum is in the left side. Even though a thyroidectomy had been done for colloid goiter seven years ago, the tumor might perfectly well have regrown or the removal may have been incomplete, and the fact that the mass in the neck and mediastinum are on the opposite sides might naturally lead one to suspect that the lower poles had been incompletely resected and regrown. The lower pole on the right side remained in the neck and the lower pole on the left side dropped down into the mediastinum as it increased in size, if it was not there at the time of the original thyroidectomy. I am leading toward the thought, of course, that the mass is thyroid. The presence of a mass five centimeters in diameter in the right side of the neck with the position and character which are described suggests thyroid. It is important that the neck mass is on the opposite side from the larger part of the mass in the chest. Notice also that the vocal cords are said to be normal. Sometimes we are deceived. One may have malignancy in the mediastinum or in the region of the recurrent nerves and not get paralysis, but as a general rule if there is no paralysis of the vocal cords with a mass in the region of the recurrent nerves it argues against malignancy.

There are, of course, other tumors of the mediastinum, but the x-ray examination has gone a long way toward eliminating them, for example, aneurysms. The aorta is described as being normal. I am not sure of bilateral tracheal compression but I should think it was present from the x-ray films. A groove around the trachea would be usual in an uncomplicated aneurysm. I mean an aneurysm without perforation. A leaking aneurysm should be considered in view of the suddenness of onset of the symptoms, in which case the mass would be a mass of semi-organized blood clot, but again I should be in favor of ruling that out from the

x-ray examination and also from the presence of the tumor on the right side in the neck consistent with thyroid.

To sum up, I should say that we are dealing with a tumor in the mediastinum which may or may not show hemorrhage into it. It is probably a colloid goiter and is the result of an incomplete resection at the operation seven years ago with regrowth. It is probably not malignant.

#### CLINICAL DISCUSSION

DR TRACY B MALLORY Dr Wallace, will you tell us what they found at operation?

DR RICHARD H WALLACE Dr Allen performed the operation under intratracheal gas and ether. The mass in the right side of the neck was a large nodular goiter involving the whole right lobe of the thyroid. It was not connected with the mediastinal mass. Most of the left lobe had been removed at the previous operation but at the lower pole there was a pedicle about the size of a lead pencil, mostly blood vessels, which connected with the mediastinal tumor. This was separated with some difficulty in a definite line of cleavage and the tumor was delivered without splitting the sternum. It was a nodular goiter.

DR FRANK T HUNTER The comment I have to make is about the blood count. You sometimes see people with cyanosis and dilatation of the veins down the arms that have a high red count if you take it from the finger. If you take it from the toe you get a normal figure. It is important to know where the blood was taken.

#### DR OLIVER COPE'S DIAGNOSIS

Colloid goiter

#### PATHOLOGIC DIAGNOSES

(Substernal goiter)

Hyperinvolution of thyroid

#### PATHOLOGIC DISCUSSION

DR MALLORY The specimen removed from this patient consisted of a large, substernal colloid goiter, measuring 9 by 7 by 3 cm., with another mass of equal size and similar appearance from the right lobe of the thyroid itself. There was no significant amount of hemorrhage, though a few small cysts contained bloody fluid. Microscopically it shows the typical hyperinvolution of a benign colloid goiter.

# The New England Journal of Medicine

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## SECTION OF DERMATOLOGY AND SYPHILIOLOGY

WHEN the writer of this editorial returned from his study years in Europe in the autumn of 1895 he was invited to join the Boston Dermatological Club and at its first meeting he found himself, a mere stripling in more ways than one in the midst of a group of elders wise in their knowledge of the world and in their knowledge of cutaneous medicine. These men were Dr James C White, Dr Edward Wiglesworth, Dr Francis B Greenough, Dr Abner Post, Dr James Sullivan Howe and Dr John T Bowen.

This interesting group of men practically constituted dermatology in Boston forty years ago. Now we find a flourishing society devoted wholly to the interests of dermatology and syphilology, meeting enthusiastically four times a year and composed of seventy five men and women, two-thirds of whom live in or near Boston the remainder scattered over the New England states.

Last spring a small number of these men led by Dr Harvey P Towle, thought the time ripe

for the further advancement of dermatological interests in Massachusetts and applied to the Councilors of the Massachusetts Medical Society for permission to create a new section and this request was granted.

The first meeting of this new body will occur this coming June and a committee of its sponsors has arranged the program. The Chairman, Dr Charles J White, will narrate the early history of dermatology in Boston, Dr C Morton Smith will record a remarkable instance of a seeming cure in a syphilitic rarity, Dr Arthur M. Greenwood will bring our knowledge of ring worm and its allied diseases up to date. The remaining two places on the program have been purposely thrown open to competition which will be adjudged by the organization committee of the section and anyone desiring to enter the lists may do so with the proviso that he send his finished paper to the Secretary of the Section, Dr William P Boardman, 388 Marlborough Street, Boston, not later than May first.

Dr Greenwood's paper upon a disease which affects such a large percentage of our citizens and which is occupying the time of so many investigators in various parts of the world should attract to this new section meeting a large number of listeners and, we hope, discussers.

## SECURITY TO PHYSICIANS

THE Bill known as Senate 52, "An Act providing Security to Hospitals and Physicians in the Enforcement of Reasonable Charges for Treatment of Certain Personal Injury Cases", is still under consideration by the General Court. It provides a reasonable method for dealing with a situation in which physicians are involved, sometimes against their will, for they rarely refuse to render assistance in emergencies or cases of accident, and in which physicians cannot now obtain a just recompense for services rendered. What is asked is that if a person is injured, and if claim for damages is made and paid the claims of the physician and the hospital for recompense shall receive just consideration. These claims are to be given a statutory status which they do not now possess.

Since similar legislation in other states is reported to be working well it is important that the present bill become law without essential change. Therefore until the bill meets final disposition, physicians should follow up their representations made so well at the public hearing before the Joint Judiciary Committee by continuing to remind Senators and Representatives of the necessity of finding a just way of dealing with what has become for the physician an intolerable situation. Do not let the General Court forget the interest of the physicians.

## THIS WEEK'S ISSUE

CONTAINS articles by the following named authors-

PRATHER, GEORGE C MD Harvard University Medical School 1924 F A C S Urologist, Newton Hospital Assistant Urologist, Boston Living-In Hospital Assistant, Beth Israel Hospital Consultant Urologist, Heywood Memorial Hospital His subject is "Ectopic Testis as a Cause of Ureteral Dilatation Case Report", Page 413 Address 99 Commonwealth Avenue, Boston, Mass

GRAVES, ROGER C AB, MD Syracuse University College of Medicine 1918 F A C S Urologist, Carney Hospital Genito-Urinary Surgeon, Pondville Hospital, Wrentham Member of the Associate Staff, New England Deaconess and Palmer Memorial Hospitals Consulting Urologist to Quincy City Hospital, Winchester Hospital and Lakeville State Sanatorium Genito-Urinary Consultant, Tumor Clinic of the Boston Dispensary Associate Consulting Urologist, Brockton Hospital Address 12 Bay State Road, Boston, Mass Associated with him is

MABREY, ROY E AB, MD Harvard University Medical School 1929 Formerly, Resident at Pondville Hospital Address 227 Beacon Street, Boston, Mass Their subject is "Adenocarcinoma of Kidney Recurrent After Twenty Years" Page 416

RILEY, AUGUSTUS AB, MD Harvard University Medical School 1907 F A C S Assistant Professor of Genito-Urinary Surgery, Harvard Medical School Visiting Surgeon for Urology, Boston City Hospital Consultant, Genito-Urinary Department, Boston Dispensary, Consultant in Urology, Malden Hospital His subject is "Keratoderma Blennorhagicum (Gonorrhreal Dermatitis)" Page 417 Address 868 Beacon Street, Boston, Mass

KICKHAM, C J E AB, MD Harvard University Medical School 1927 Assistant Urologist, Pondville Cancer Hospital, Norfolk, and Carney Hospital, South Boston, Mass His subject is "Calcified Hydrocele of the Tunica Vaginalis Testis Case Report" Page 419 Address 12 Bay State Road, Boston, Mass

O'BRIEN, EDWARD J MD Tufts College Medical School 1912 Visiting Surgeon, Cambridge City Hospital, Visiting Urologist, St. Elizabeth's Hospital, and Consulting Urologist, Somerville Hospital His subject is "Report of Unusually Large Malignant Growth in Undescended Testis" Page 420 Address 270 Commonwealth Avenue, Boston, Mass

TROWBRIDGE, EDWARD H AB, MD Bowdoin Medical School 1884 F A C S Formerly, Visiting Surgeon to Worcester City Hospital Surgeon-in-chief to the Harvard Private Hospi-

tal at Worcester, Mass Past-President, Massachusetts Association Boards of Health His subject is "Report of Urological Case Discovered in Course of Examination for Other Ailment" Page 421 Address 36 Pleasant Street, Worcester, Mass

MOORE, CARL R BS, MA, Ph D Professor and Chairman of the Department of Zoology, University of Chicago His subject is "Testicular Biology, Scrotal Function and the Male Sex Hormone" Page 422 Address University of Chicago, Chicago, Illinois

WAITE, J HERBERT and BEETHAM, WILLIAM P See page 403, issue of February 28, for records of authors

## OPENINGS FOR YOUNG PHYSICIANS

FOR well-equipped young doctors, Maine offers attractive opportunities as indicated in the advertisement on page vi of this issue

The people of this state are progressive, energetic and cordial The medical association is well organized, and aggressive in its public health policies

The invitation to settle in Maine should be considered by young physicians who are looking for openings

*The Massachusetts Medical Society*SECTION OF OBSTETRICS  
AND GYNECOLOGY\*

THOMAS ALMY, M.D., C J KICKHAM, M.D.,  
*Chairman,* *Secretary,*  
140 Rock Street, 524 Commonwealth Avenue,  
Fall River, Mass Boston, Mass

## ARE EPISIOTOMY INCISIONS ADVISABLE DURING LABOR?

AN episiotomy properly done and repaired assures the patient of a perineum and vaginal orifice adequately supported and constricted as before delivery

In the home, or where conditions are not ideal for surgery, an episiotomy should be done only where a laceration is imminent In a well-equipped hospital a routine episiotomy can be performed especially where the accoucheur is using routine prophylactic forceps

In the gradually dilating process of the slowly descending head it is impossible to determine before delivery the extent of the muscle separation as compared with muscle stretching An episiotomy solves this problem and allows an anatomical reconstruction of the perineum

Although there is much to be said in favor of the mediolateral episiotomy, I personally pre-

\*A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

for the midline episiotomy combined with a divergent incision when an anal sphincter tear is imminent. The repair of this type of episiotomy assures a symmetrical result because the incision separates the sphincter vaginae and the transversalis fascia in midline where a laceration usually occurs. It also follows the median raphe of the levator ani in the same line that the descending head usually separates the fibers.

The keynote of success in the anatomical repair of an episiotomy is the denudation of the mucous membrane from the underlying muscle layers and fascia. Failure to do this, that is, merely approximating the incised edges, often results in a subsequent rectocele the reason for this being that the levator ani fibers have been separated by the descending head in the midline higher and deeper than the episiotomy incision has extended. The denudation process (best done by gauze dissection) clearly exposes all the muscle and fascia layers and an accurate anatomical reconstruction is not only possible but simple.

Occasionally in cases where an episiotomy seems unnecessary and the child is delivered with no apparent laceration, careful palpation reveals an extensive submucous separation of the levator ani fibers in the midline. This means a rectocele later, and I believe one is justified in opening the perineum and approximating this muscle separation by a perineorrhaphy.

In the repair of any perineal laceration or episiotomy, I believe chromic 1 or 2 is adequate and satisfactory. I also strongly feel that silkworm gut sutures, as were formerly used, are not only a source of discomfort to the patient but a definite detriment to the healing process in many cases.

### The Massachusetts Medical Society

#### LEGISLATIVE BILLS AFFECTING THE MEDICAL PROFESSION

Although reference has already been made to the following bills the careful attention of the Fellows of the Massachusetts Medical Society is again directed to this list now before the General Court and upon which final action has not yet been taken.

##### Bills which should be supported

Senate 52, proposed by Senator Miles was heard before the Joint Judiciary Committee on January 29. This bill contemplates the enforcement of reasonable charges for treatment by hospitals and physicians in certain personal injury cases. This bill was enthusiastically supported by the Massachusetts Medical Society and by various hospital representatives but needs further support from the individual members of the Legislature as well as from the members of the Committee.

House 758 is on the petition of the Massachusetts

Medical Society and proposes to place in the hands of the Board of Registration in Medicine the power of approval of medical schools which train candidates for the licensing examinations. The Council of the Massachusetts Medical Society at its October meeting directed the Committee on Medical Education and Diplomas the Committee on State and National Legislation and the Committee on Public Relations to confer and to propose suitable legislation designed to elevate the qualifications required for licensure in Massachusetts. As a result of these conferences this bill was introduced. It is an educational measure and is not aimed at any institutions but gives time for any school which desires to do so to raise its standards of training so that it can readily obtain the approval of the Board of Registration. This bill will be vigorously opposed, and already individual members of the Committee of the Legislature have been approached by the opposition. Every effort should be made to present the matter in its proper light to the members of the Legislature from your district. The hearing has been scheduled for March 7 before the Committee on Education.

##### Bills which should be opposed

House 1157 is a bill to create a board of examination and registration to regulate the practice of chiropractic. This bill was scheduled to come before the Public Health Committee on March 7. It is evident that once more a very strenuous effort is being made to break down the present registration laws and it is hoped that the members of the profession will realize the serious nature of this attack and will make their influence felt in the proper direction.

House 1468 proposes to create a board of examination and registration to regulate the practice of magnetic healers. This bill has been assigned to the Committee on State Administration. It is another bill against the best interests of the public, and every effort should be made to oppose it. The hearing will be held March 8, at 10:00 A.M. in Room 443 State House Boston.

Each Fellow is urgently requested to aid the Committee on State and National Legislation by appeals to each Legislator from his district.

### MASSACHUSETTS LEGISLATIVE NOTES

H 60. Bill requiring the vaccination of children in private schools (Report leave to withdraw Accepted in House.)

H 528. Bill providing for the regulation of practice of physicians and surgeons in certain cases. (Report, leave to withdraw Accepted in House.)

H 623 Petition of the Citizen's Committee Opposing Compulsory Vaccination for legislation to make vaccination and inoculation voluntary Report, leave to withdraw Accepted in Senate. (Final.)

H 755 Petition of the Citizen's Committee Opposing Compulsory Vaccination that the public be protected from impure virus or serum and for a civil remedy for abuse thereof Report, leave to withdraw Accepted in Senate (Final.)

**MISCELLANY****A MEDICAL RACKET?**

In connection with the prediction that under existing law, automobile insurance will be increased, Mr Frank A Goodwin, Registrar of Motor Vehicles, is quoted as declaring that "the insurance law in its present form has become a racket for doctors and lawyers"

We respectfully suggest that Mr Goodwin should explain what he means by a "racket" for doctors, for we have the impression that the medical profession has not been fairly dealt with in many cases of automobile accidents

**THE RESIGNATION OF DR HAMILTON**

Dr Alice Hamilton, Assistant Professor of Industrial Hygiene, at the Harvard Medical School, has tendered her resignation to take effect September 1, 1935

**CORRESPONDENCE****NEEDLESS REPETITION**

February 23, 1935

Editor, *New England Journal of Medicine*,

As one of the by products of the depression, based upon an evident misconception of the meaning of a word, our language seems to have been enriched by a new expression which is being used by many doctors and frequently appearing in the columns of the *Journal*, i.e., "indigent poor" Any English dictionary will inform the inquirer that indigent means needy or being in want. Indigent poor, therefore, is another way of saying poor poor, when quite obviously it is the intent to designate those who are in needy circumstances and who are ill

Yours truly,

H F R WATTS, M D

6 Monadnock Street,  
Boston, Mass

**RECENT DEATHS**

**BERGERON** — FRANCOIS DEBOGIA BERGERON, M D, of 120 William Street, Fall River, Massachusetts, died at his home, February 26, 1935 He was born in Montreal in 1870, and graduated from the University of Montreal Faculty of Medicine in 1894

He is survived by four daughters, Mrs Peter S McMurray, Mrs Altier Lavigne and the Misses Alice and Madeline Bergeron, all of Fall River, and five sons, Hector H, and Bernard L Bergeron of Fall River, and D Louis, Dominick A., and Paul Bergeron of Washington, D C, and a brother, Hector J Bergeron, of Montreal, Canada.

**ST JACQUES** — ROBERT JOSEPH ST JACQUES, M D, of 71 Broad Street, Marlboro, Massachusetts, died in that city March 1, 1935 He was born in Canada in 1856 and graduated in medicine from the University of Montreal Faculty of Medicine in 1879 He practiced in Canada, New Hampshire, Whitinsville, and Spencer, Massachusetts, before settling in Marlboro He retired two years ago

Dr St. Jacques is survived by two daughters, Miss Arline St Jacques and Mrs Wilfred J Maybay, of Marlboro, a son, Emile St Jacques, of Wareham, and a sister, Mrs Christine Sarazen, of Three Rivers, Quebec

**JOSEPH** — RAPHAEL N JOSEPH, M D, house physician at the Lakeville Sanatorium, died March 2, 1935 He was a graduate of the Georgetown University School of Medicine and had been an interne at St. Luke's Hospital, New Bedford.

He is survived by his parents, Mr and Mrs Nasar Joseph, a brother, Joseph Joseph, and a sister, Miss Mabel Joseph, all of New Bedford

**NOTICES****CLINIC AT THE PETER BENT BRIGHAM HOSPITAL**

At 3 30 P.M on Thursday, March 14, in the Amphitheatre of the Peter Bent Brigham Hospital, Dr Henry A. Christian, Physician in Chief, Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School, will give a medical clinic To it are cordially invited practitioners and medical students These clinics will be repeated on Thursdays until May

On Saturdays in the wards of the Peter Bent Brigham Hospital, from 10 to 12, staff rounds will be conducted by Dr Christian These are open to all physicians

**LAWRENCE CANCER CLINIC**

Established 1928

Lawrence, Mass., March 6, 1935

To the Physicians of the North Half of Essex County

Dear Doctor

The regular Lawrence Cancer Clinic, to be held at Lawrence General Hospital, 1 Garden Street, Lawrence, upon Tuesday, March 19, at 10 00 A.M, will be a Demonstration Clinic with Channing C Simmons, M D, of Boston, Associate in Surgery at Harvard University Medical School, Surgeon in-Chief to Collis P Huntington Memorial Hospital, and member of the Cancer Commission of Harvard University, Boston, present as consultant. You are invited to accompany any of your patients whom you desire shall have this service, or to send them with a note, and a report will be returned to you This service is gratis Your attendance at the Clinic is always welcome

This Clinic is endorsed by the Committee on Post graduate Instruction of the Massachusetts Medical Society

Committee

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HARRY H. NEVERS, M D,  
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## REPORTS AND NOTICES OF MEETINGS

### NEW ENGLAND ROENTGEN RAY SOCIETY

A meeting of the New England Roentgen Ray Society was held at the Boston Medical Library on the fifteenth of February. Dr Healy presided and Dr El Ross Mintz, the speaker of the evening gave a lecture on "Tumors of the Kidney." Dr Mintz said that a complete understanding of the underlying pathology is a definite aid in the clinical as well as the x-ray diagnosis of kidney tumors. These tumors may be divided into two categories first those of the cortex including adenocarcinoma, hypernephroma, embryoma, and Wilms tumor and secondly tumors of the pelvis including epidermoid carcinoma and papilloma.

Adenocarcinoma and hypernephroma usually start as small nodules in the cortex. There is no change in the outline until the tumor encroaches on the pelvis or pushes the capsule outward. These neoplasms may reach enormous dimensions and may be of considerable size without showing any abnormality by x-ray. Hematuria is the usual sign after impingement on the pelvis. As they grow they tend to invade the excretory portion of the kidney. Occasionally hypernephromas are accompanied by calculi but it is the epidermoid carcinoma of the pelvis which is most commonly associated with stones. Tumors of long duration may lead to numerous small areas of calcification and hypernephromas frequently invade the renal vein.

A case of leiomyosarcoma in a woman of sixty five was demonstrated by means of lantern slides. The type of tumor cannot be distinguished by the pyelogram. Any adrenal tumor tends to push the kidney down, and can, therefore, be confused with other neoplasms. In only four per cent of cases do kidney tumors become necrotic, and therefore these patients very seldom run any temperature. It is uncommon to have the entire kidney tissue destroyed so that usually intravenous pyelograms show that some dye is excreted while in hydronephrosis none is visible by x-ray. Most retroperitoneal tumors push the ureter over toward the midline.

Tumors of the anterior surface of the kidney are apt to produce hydronephrosis. It is often difficult to distinguish tumors of the pelvis from those arising in the cortex and secondarily invading the pelvis.

Benign papillomas arise in the kidney pelvis. Dr Mintz mentioned several cases of this tumor causing hematuria in the prostatic age and warned against blaming the prostate for hematuria in all cases in this age group. If such tumors are situated at the renopelvic junction they are apt to obstruct the ureter so that no dye will be excreted. It tends to invade the ureter and form papillomatous implants in the bladder wall so that it is sometimes hard to tell whether the condition is primary in the bladder or in the kidney. These papillomas may likewise invade the secretory portion of the kidney. Epidermoid carcinoma of the pelvis is very malig-

nant, tends to metastasize early and widely involves the renal parenchyma, and tends to be associated with stones. The prognosis in such cases is rarely over five years and pain is the chief symptom.

Hypernephromas may cause a pulsating metastatic mass in the sternum. Embryomas usually occur in children and in eighty-five per cent of the cases the presenting symptom is a mass. For this reason the mortality is very high only a dozen cures having been reported in the literature and the condition usually being discovered so late that nothing can be done. Carcinomas of the kidney in children rarely metastasize to bone, although slides of such a case were shown. In the differential diagnosis nephritis may be confusing and a blood clot in the pelvis may cause definite changes in the pyelogram. It is important to remember that hemorrhage from tumors often starts after a slight trauma. Although we may say that generally in a solid tumor it is difficult to flare out the calyces in a retrograde pyelogram and that this is less difficult in the cystic type of tumor yet it is usually impossible to tell these two types apart.

A hemorrhagic cyst of the kidney may be confusing and it is often difficult to distinguish infection from neoplasm by the x-ray although the ureter is usually dilated in infection and such patients have fever while fever is rare in tumors. It is advisable to order repeated pyelograms so that any changes that occur may be watched closely.

The end results of fifty cases of renal tumors at the Massachusetts General Hospital were presented. Most of these cases came to the hospital with large tumors and with metastases in the chest. Forty-six per cent of the operated cases are still living although some of them not long enough to be called cures. Thirty per cent of five year cures have been reported in the literature. The chances of cure are better if the patient reports the first indication of hematuria. Cases which are cured are practically always taken in the early stages.

In the discussion which followed, Dr Sosman stressed the importance of the pathological understanding of a condition in order to properly read the x-ray. He said that Dr Waters uses certain criteria for distinguishing hypernephromas from adenocarcinoma, the former causing an elongation and distortion without invasion of the kidney pelvis while the adenocarcinoma both distorts and invades. However the pathologist is often not able to distinguish these two types of tumor. Recently good reports have come from Dr Waters on the use of deep x-ray therapy before operating for these tumors. He presented several unusual cases from the Peter Bent Brigham Hospital. The first was a fifty year old woman complaining of pain in the flank with a bilateral distortion of the renal pelvis and soft tissue masses. The second was a fifty two year old woman with pain and presenting pyuria on the right, but showing by x-ray involvement of both sides, with a question of hydronephrosis on the right and a tumor on the left. Intravenous pyelograms showed poor function on both sides indicating that the tu-

mor may be a single benign cyst. Another case was shown where the left ureter was pushed far over to the left and the calyces greatly distorted. This was caused by a benign neurofibroma of the lumbar nerve.

Dr Dresser said that metastases from hypernephromas sometimes pulsate and are clinically diagnosed as aneurysms. Dr Mintz assured the audience that distortion was of no differential importance, and he questioned the value of the pre-operative use of x-ray. Dr Sosman said that Dr Waters has been able to shrink a sizable kidney tumor, and in this way facilitated surgical removal. Films of a child's case were presented in which there was probably rupture of the upper calyx on the right side due to the use of too much dye.

#### MINERALS IN OUR BODIES AND OUR FOODS

Dr Harry C. Trimble was the speaker on February 10, in the Course of Sunday Public Lectures at the Harvard Medical School. The subject was "Minerals in Our Bodies and Our Foods." The following are extracts from the presentation:

Minerals in the biochemical sense refer to the non-combustible residue or "ash" which remains after a tissue or a food is burned. In addition to those elements long included in this category, others less well known have been reported in recent years. These include fluorine, silicon, copper, manganese, and zinc, whose presence in minimum amounts seems to be definitely established and aluminum, barium, boron, cobalt, nickel, lithium, rubidium, strontium, and titanium, whose presence have been reported by one or more observers. Refinement of and application of spectroscopic technique are revealing the presence of elements hitherto unsuspected. Whether all elements thus far listed as constituents of our bodies are present for a definite purpose, or whether a number may be merely the result of accidental lodgment of materials present in traces in the foods we eat, remains for future experimentation to determine.

The biochemical study of a particular element or substance contained in a food involves attempts to answer many questions. Among these are the following: (a) Is the substance present in a food? (b) In what amounts? (c) While in the gastrointestinal tract is its composition altered by enzymes, or by the simultaneous presence of other substances? (d) Is it soluble or insoluble in body fluids? (e) Is it excreted or absorbed? (f) What is its concentration in the blood? (g) Is the concentration contracted or does it fluctuate? (h) Does it pass into the tissues or is it excreted? (i) Is it utilized? (j) What are the degradation products? (k) Is an excess stored in the body? (l) What is the normal daily intake? (m) What is the effect of an excess or a deficiency of the substance?

In the body, water constitutes sixty-five per cent of the total weight, organic material twenty-nine per cent, mineral matter five per cent. The mineral ions obtained from digestion of foods are in general

quite soluble. Calcium, phosphorus and iron may produce certain combinations which are of limited solubility and therefore present special problems. As the food is digested, the mineral ions are released into solution and, with some exceptions, the major percentage gradually passes into the blood. Some ions interfere with the solubility of others, for instance, one combination between calcium and phosphorus (tricalcium phosphate) which is formed in the middle and lower intestine is only slightly soluble. It passes through these regions largely unabsorbed. The fact that some calcium salts of other acids produced from normal foods also have a limited solubility was mentioned.

Extensive data of many investigators demonstrate a careful balance between acid and basic ions in the circulating blood. The concentration of basic ions fluctuates only very slightly in normal, and even the majority of abnormal, circumstances. Although the absolute quantities, and the ratios, of sodium, potassium, calcium and magnesium which enter the blood from time to time may vary over wide ranges, both the absolute amounts and the ratio of these substances to each other in 100 cc of blood plasma remain very constant. The lack of uniformity in the distribution of mineral ions within the various separate parts of the body is well illustrated by the behavior of those chemically very similar ions, sodium and potassium. Sodium is in excess in the blood plasma and the extra cellular fluids, while potassium is the more abundant within the red blood cells and muscle cells. Calcium and magnesium, likewise chloride and bicarbonate ions, have their own disparities of distribution among body tissues and between various body fluids.

The many possible dispositions of an inorganic ion, after it enters the body, are illustrated by calcium. This element may continue along the intestine and be excreted, or it may enter the blood. If it follows the latter course, it may be excreted when the blood passes through the kidney or it may pass into a gland and then enter a digestive juice and again return to the intestine, and perhaps reenter the blood once more. From the blood, calcium may enter the cells of muscles or other body tissues, or in the form of calcium salts it may be stored in the hard parts of the body, the bones and the teeth. From many of these locations it may again return to the blood at a later time. A state of physical and chemical equilibrium, undoubtedly influenced by other factors, exists between the calcium ions in the various fluids and parts of the body. If a disturbance in one locality occurs, the effect, theoretically at least, is felt throughout the organism and the disturbance may even influence the behavior of phosphate and still other ions.

The effects of a total deficiency of food upon mineral excretion have been shown in F. G. Benedict's classic experiment upon a fasting man. This revealed that the amount of sodium and chloride ions within the body is rigorously conserved when the intake of these is halted. From the second to the thirty-first day of fasting, the loss of sodium chloride

was reduced to only a small fraction of that occurring on the initial day. However elements such as nitrogen sulphur phosphorus calcium magnesium and potassium, that are contained within or associated with wasting tissues tend to be excreted in quantities which diminish only to moderate extent during the fasting period.

If a person eats a wide variety of natural foods in reasonable quantities there appears to be little danger that the intake of mineral elements will be deficient. In the case of calcium is it necessary that a special effort to include calcium rich foods should be made? Sherman in his statistical study of many American diets found that this element was consumed in amounts which provided a lower margin of safety for the individual than was true of other mineral elements.

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BOSTON CITY HOSPITAL HOUSE OFFICERS  
ASSOCIATION

A meeting of the House Officers of the Boston City Hospital was held on the evening of January 3 in the Thorndike Memorial Amphitheatre. Dr Chester Keefer discussed "The Anatomical Diagnosis of Various Types of Chronic Arthritis". The diagnosis of this condition should be tridimensional that is etiological, anatomical, and functional although this is not always possible. Joint diseases fall into two groups the degenerative type and the proliferative type. In the first of these the primary disease is in the cartilage while the other changes are secondary. The proliferative type of arthritis begins in the synovial membrane and the perarticular tissue.

Since the degenerative type is not an inflammatory condition it should be called "arthrosis". Traumatic, hemophilic and Charcot's joints are included in this type. Dr Keefer showed a series of slides which demonstrated the gross and microscopic changes in these different types. As age increases the number of joints showing degenerative change also increases the three most common being the knee, the acromioclavicular joint, and the elbow. In the degenerative arthritis of the knee the medial facet in the patella is the first portion to show a degeneration of the cartilage. The damage varies from a slight erosion to complete eburnation. Histologically secondary changes are seen first, fibrillation of the cartilage and a loss of elasticity and secondly a compression and thickening of the subchondral bone which attempts to fill in the cartilaginous defects resulting in a dense eburnated bone. Spurs are formed either by the flattening of the surface cartilage pushing the edges out, as in a mush room or occasionally new bone formation occurs at the edge of the joint.

In contrast to the above process the proliferative type first shows a perarticular change without any cartilaginous pathology. There is an inflammatory reaction and infiltration of the synovial membrane which is normally only two or three cells in thick-

ness. Polymorphonuclear cells are the first to infiltrate but later there are lymphocytes and plasma cells. Following this articular surface damage, aggravated by movement, degenerative changes may occur. In rheumatoid arthritis a particular form of proliferative arthritis there is a synovitis involving the perarticular tissues which gives the typical fusiform joints. There is a projecting accumulation of fibrin, like heart vegetations and later a proliferation and infiltration of the surface cells. When the joint becomes immobile because of the pain the synovial membrane grows over the surface and forms fibrous adhesions and there is much atrophy in and above the joint, largely due to this immobilization. The cartilage degenerates and is replaced by new bone which in turn atrophies, leaving a thin irregular cancellous bone at the joint surface.

In the determination of the etiological factors in arthritis, cytological and bacteriological studies of the joint fluid are of distinct value in the proliferative type.

Dr G E Haggart continued the discussion with a talk on "The Orthopedic Treatment of Chronic Arthritis". He showed slides of several cases of degenerative arthritis of the spine which usually occurs in squat, hard working persons and can usually be helped considerably by bed rest, diet, physiotherapy and a back brace consisting of two uprights held snugly to the spine by straps. In some instances mechanical factors such as lumbarization of the first sacral vertebra and a resultant unstable joint which is prone to strain must be dealt with. Proliferative arthritis of the spine causes ankylosis of the joints with a practically solid column of bone. This occurs usually in young adults and cannot be stopped once it has started but deformities can be prevented by bed rest with hyperextension of the back to overcome muscular spasm followed by a plaster jacket applied to hold the spine in the corrected position so that it will fuse in an advantageous position.

Dr Haggart then spoke briefly on posture and its importance in arthritis. The long slender type of individual has poor muscles and poor posture and a constant ptosis. A corset for the young woman with this type of posture often is of value. Dr Haggart believes that the individual should be trained to use his gluteal muscles which when contracted cause the pelvis to tilt backward thus preventing a lumbar lordosis. The patient is first taught to contract these muscles while lying on his face. With gluteal muscle contraction, the legs also internally rotate and the feet invert. Pelvis rocking exercises while sitting in a chair are of value, and further exercises to keep the chest up and the chin in help to give a proper posture.

The shoulder joint is not particularly subject to arthritis. In most instances pain in this region is due to subacromial bursitis although cases of acromioclavicular arthritis are fairly frequent. The bursa may be injected with novocaine and the pain stopped for several days. Also the perarticular

structures may be injected in this way and use of the arm procured

Foot strain leads to external rotation and to abduction and an abnormal weight-bearing line. In selected cases of chronic foot strain, manipulation under general anesthesia is employed to secure marked inversion and dorsiflexion followed by eversion with the object of breaking up adhesions. The forward part of the foot is then plantar flexed while the heads of the metatarsals are supported. In ambulatory cases a plaster boot is then applied with the foot inverted.

Hypertrophic arthritis of the hip, so often seen in elderly, obese patients who must be ambulatory, may be materially helped by an initial period of bed rest, followed by a walking caliper brace to remove the stress of weight-bearing on the joints. In selected cases arthroplasty or arthrodesis is employed.

Certain cases of the degenerative type of arthritis of the knee in obese women following the menopause are helped by thyroid. A flexion deformity of the knee in the rheumatoid type is very disabling and may be effectively treated by a wedging plaster or by the application of skeletal traction applied at the upper and lower tibia or os calcis. Traction is then exerted in the line of the deformity which is gradually corrected. Walking calipers are then applied.

The meeting was closed with an instructive motion picture on arthritis which was produced at the Mayo Clinic under the direction of Dr. Hench.

#### SEMI-ANNUAL MEETING OF MASSACHUSETTS TUBERCULOSIS LEAGUE

Attended by representatives of the twenty eight Affiliated Organizations from most of the Counties of the State, the Semi-Annual Meeting of the Massachusetts Tuberculosis League was held at the Hotel Statler on February 7. In addition to the Massachusetts representatives there were guests from Maine, New Hampshire, Rhode Island and Connecticut.

Dr. Frederick T. Lord, President of the League, presided.

The speaker of the day was Philip P. Jacobs, Ph.D., Director of Publications and Extension of the National Tuberculosis Association. He took as his topic "A Challenge to the Future". Mr. Jacobs earnestly pleaded for a more intensive application of existing knowledge, an improved diagnostic service, especially in the cities, and a broader program of health education to reach all classes in the population. He stated that after almost thirty years' experience in the tuberculosis field he believed that the day when tuberculosis shall have ceased to be a serious problem can be hastened by at least ten years through an intensive drive by all health agencies in the community. He outlined in detail plans for such an intensive campaign. These included enlargement of the Boards of Tuberculosis Associations, Institutes for Public Health Nurses, an intensive

Early Diagnosis Campaign, and an enlargement of the Sanatorium facilities throughout the State. He praised the Department of Public Health for its leadership in the tuberculosis field and urged the State League and its Affiliated Organizations to co-operate fully not only with the State Department but with the local Health Departments.

Following the luncheon meeting there was a meeting of the Board of Directors at which the Board endorsed Bills pending before the Legislature to permit the City of Cambridge to enter the Middlesex County Sanatorium District, and to permit the enlargement of Westfield State Sanatorium to care for 250 adult patients.

Present at the Directors' Meeting were the following: Dr. Frederick T. Lord, President; Dr. Francis P. Denny, Miss Josephine B. Colt, Rev. Walter F. Greenman, Mrs. Leslie B. Cutler, Professor Murray P. Horwood, Dr. Carl C. MacCorison, Mr. Raymond S. Patterson, Dr. Alton S. Pope, Miss Margaret Weir, Dr. John B. Hawes, 2nd, Mrs. H. G. Hamann, Mrs. A. L. Johnson, Mr. Clifton H. Hobson, Mrs. William C. Rogers, Dr. Samuel Hoberman and Mrs. Ralph S. Drury.

The Semi-Annual Meeting of the League was held during the week in which Mr. Jacobs conducted a Tuberculosis Institute for Tuberculosis Secretaries and Public Health Nurses. The Institute was successful far beyond expectation, the attendance always taxing the capacity of the meeting room. In addition to Massachusetts Secretaries and nurses there were representatives present from all the New England States except Vermont. Dr. Henry D. Chadwick, State Commissioner of Public Health, Dr. John B. Hawes, 2nd, President of the Boston Tuberculosis Association, Dr. Nahum R. Pillsbury, Superintendent of Norfolk County Hospital, Dr. Alton S. Pope, Director of the Division of Tuberculosis of the State Department of Public Health, and Professor Clair E. Turner were speakers on the Institute program.

#### MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

Dr. Christian conducted one of the regular Thursday afternoon medical clinics at the Peter Bent Brigham Hospital on the seventh of February. He spoke briefly of a patient who thirty years ago developed a typical attack of coronary occlusion with agonizing precordial pain and prostration lasting six hours. Since this episode he had had recurrent attacks of anginal pain which recently had become more frequent until they would even occur while he was resting quietly. Last summer, however, after developing signs of decompensation, the attacks of angina stopped, and Dr. Christian pointed out that this is not infrequently the case in such patients. At postmortem the musculature of the cardiac apex was thinned and bulged out in an aneurysmal dilatation which in all likelihood represented the region of a previous infarct.

A patient was presented who one year ago ex-

tered the hospital for ulcerations and inflammation of his legs. He had suffered with varicose veins for fifteen years and at the present time entered for treatment of another small ulcerated area. Four weeks before entry he developed some dyspnea on exertion and physical examination showed a moderately enlarged heart, an enlarged liver and edema. He was much improved after four days of bed rest. Dr Christian discussed the condition of peripheral arteriosclerosis as shown in this patient. The radial artery was beaded and the brachial thickened and tortuous. This type of arteriosclerosis occurs usually as an aging process though it may occur prematurely the vessel walls are apt to become calcified. There is no hypertension usually and the blood flow is maintained without much pulse pressure. Sir Clifford Allbutt spoke of this type as degressive arteriosclerosis to distinguish it from the form associated with hypertension.

This patient also showed some tremor of his hand and this suggests some arteriosclerosis in the cerebral vessels. Small and scattered skin lesions with silvery scales suggesting psoriasis were demonstrated above the varicose dermatitis. Dr Christian contrasted the arteriosclerosis of this patient with the person who has hypertension but no change in his vessels until a later date. The first type is caused by a change in the vessel wall itself, while in the hypertensive type it may be due to the increased pressure, but this theory may be questioned because the increased pressure developed in the vessels of the upper extremities of people with coarctation of the aorta has been shown to cause no demonstrable change in the small peripheral arteries. In the hypertensive type the changes occur in the smaller vessels and may be due to some primary disease of these vessel walls, which is not clinically recognized and which causes the hypertension. Lewis believes that Raynaud's disease is caused by a condition which is primary in the vessel walls and acts to lower the threshold to such an extent as to allow nervous impulses to cause a spasm. It may be that in hypertension there is a similar disturbance of the arteriolar wall, and if this be true, the interruption of certain sympathetic nerves by the surgical procedures commonly in vogue at present are to be regarded with skepticism as to permanent benefit.

The patient also showed definite arcus senilis and Dr Christian said that the common teaching that this condition is a manifestation of arteriosclerosis and old age is false, there being no connection with either the true etiology not being known.

#### THE ANNUAL MEETING OF THE BOSTON TUBERCULOSIS ASSOCIATION

This meeting was held at the Sheltered Shop 126 Newbury Street, Boston, February 25 1935. In his annual report, Dr John B. Hawes 2d president of the Association expressed the feeling that Boston should contribute to the support of the Prendergast

Preventorium because of the benefit to the city in prevention of active cases of tuberculosis.

The Mayor of Boston Mr Mansfield expressed sympathy with Dr Hawes attitude but was doubtful of the right of the city to aid a technically private institution.

Other officers elected for the ensuing year are Dr James J Minot, vice-president George S Mumford, treasurer and Mrs. Reginald Heber White clerk.

#### THE ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The Essex South District Medical Society held a regular meeting and dinner at the Addison Gilbert Hospital Gloucester on February 13 1935 with the following program Clinic 5 PM

- 1 Trichinosis. Dr Earl Greene.
- 2 Unusual Gunshot Wounds Dr W R. Irving
- 3 Recurring Guhimata of Skin. Dr R. P. Hallett,
- 4 Intracranial Injury without Fracture of Skull. Dr J J Egan Jr
- 5 Acute Leukemia. Dr H. Carvell.
- 6 Pernicious Anemia with Cord Lesion. Dr H. C. Burrell
- 7 Fracture of Kidney with Slight Urinary Leak. Foreign Body in Stomach. Dr S W Mooring.
- 8 Interesting Medicolegal Cases Dr L B Hull
- 9 Use of Insulin in Nasal Cases. Meniere's Disease. Dr T H. Odeneal.
- 10 A Case of Traumatic Abdomen Dr W W Babson
- 11 Bronchiectasis with Unusual Symptoms Dr G S Rust.

At the close of the dinner the society was entertained by a brief address by the Vice-President of the hospital corporation.

The President of the Society Dr Holt called attention to several pieces of legislation now pending and urged attendance at the respective hearings.

The guest of the evening Dr Frank Pemberton of Boston spoke on "Certain Aspects of Gynecology" WM. T. HOPKINS, Reporter

#### THE CHILDREN'S HOSPITAL MEETING

The annual meeting of the Children's Hospital Boston was held February 25 1935 at the Old Colony Trust Company

The board of managers reported that during 1934 17719 children visited the clinics 61906 times. This hospital was started sixty five years ago and its purpose was to give to children of poor families expert medical care. The growth of the hospital has led to a broader policy so that now all classes of children are accepted and the institution has become a great teaching centre.

Samuel H. Wolcott was elected President F Murray Forbes, Vice-President Edward L. Bigelow Treasurer F Murray Forbes, Assistant Treasurer James Garfield Secretary and Mrs. Samuel Eliot Chairman of the Welfare Committee

### THE AMERICAN ASSOCIATION ON MENTAL DEFICIENCY

The Annual Meeting of the American Association on Mental Deficiency will be held at the Hotel Palmer, Chicago, on April 25, 26, and 27. The Thursday and Friday sessions will be devoted to studies on Mongolism, Birth Injury as an Etiological Factor in Mental Deficiency, Mental Disorders in Mental Deficiency, The Problem of Sterilization, Defective Delinquency and Its Relation to Penal Institutions, Community Supervision of the Paroled Mental Defective and Newer Methods in Institutional Training for Community Life. The Saturday session, on April 27, will be devoted to the sociological, psychological, and the special educational aspects of Mental Deficiency. Physicians are cordially invited to attend these sessions. Complete data on the program may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Illinois.

NEIL A. DAYTON, M.D., *Chairman,*  
Committee on Public Relations,  
American Association on Mental Deficiency

### MASSACHUSETTS MEMORIAL HOSPITALS

There will be a meeting of the Surgical Section in the Ladies' Aid Room (former nurses' dining room), Talbot Memorial, 82 East Concord Street, on Friday, March 8, 1935, at 12 noon.

Dr. William D. Rowland will talk on "Recent Advances in Ophthalmic Surgery" and there will be a discussion of Eye Pathology by Dr. Charles F. Branch.

MILTON C. GREEN, *Secretary*

### CONVENTION OF THE CATHOLIC HOSPITAL ASSOCIATION

The Officers and Executive Board of the Catholic Hospital Association of the United States and Canada announce that on the invitation of the Very Reverend President and Board of Trustees of Creighton University, Omaha, Nebraska, the Twentieth Annual Convention is to be held at Creighton University, June 17 to 21, 1935, under the patronage of His Excellency, The Most Reverend Joseph Francis Rummel, D.D., Bishop of Omaha.

### NEW ENGLAND PHYSICAL THERAPY SOCIETY

The regular meeting of the New England Physical Therapy Society will be held at the Evans Memorial Auditorium, 82 East Concord Street, Boston, at 8 P.M., on Wednesday, March 20, 1935.

The speaker of the evening will be Dr. L. L. Campbell, Professor of Physics, Simmons College, who will deliver the third in a series of lectures on Medical Electricity. The topics to be covered on the subject of "Light" are as follows:

Light Visible and Invisible

The Nature of Light Theories of, from Newton to Planck, and to day The Electromagnetic theory of light, the connecting link between Electricity and Light.

The Velocity of Light The ether Relativity  
Reflection and Refraction of Light Laws of  
Polarization of Light The Polariscopic  
Diffraction and Interference of Light The measurement of the wavelength of light Units of wavelength  
Dispersion of Light The spectrum Color Color blindness

Physicians and medical students are cordially invited to attend

AUTHUR H. RING, M.D., *Secretary*  
Arlington

### THE SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, March 19, 1935, at 12 noon. The speaker will be Frederick T. Lord, M.D., Member of the Board of Consultation, Massachusetts General Hospital, Clinical Professor of Medicine, Emeritus, Harvard Medical School. His subject will be "Lobar Pneumonia." All physicians are cordially invited to attend both lecture and luncheon.

### THE NEW ENGLAND ROENTGEN RAY SOCIETY

#### ROUND TABLE CONFERENCE

The March meeting will be held Friday night, March 15, 1935, at the Boston Art Club, Boston, Mass., at 8 P.M.

Dinner will be served at 6:30 P.M.

#### SCIENTIFIC SESSION

Table No 1 "Radiation Therapy" Dr. George W. Holmes  
Table No 2 "Diseases of the Bones" Dr. P. F. Butler  
Table No 3 "Pituitary Tumors Diagnosis and Treatment" Dr. M. C. Sosman  
Table No 4 "Chests" Dr. A. O. Hampton.  
Table No 5 "Gastro Intestinal Tract" Dr. Richard Schatzski

RICHARD DRESSER, M.D., *Secretary*  
695 Huntington Avenue,  
Boston, Mass.

### FOREST HILLS GENERAL HOSPITAL STAFF MEETING

There will be a meeting of the Forest Hills General Hospital Staff on the evening of March 11 at 8:00 at the Nurses' Home.

#### PROGRAM

Anesthesia Dr. Sidney Wiggin  
Practical Anesthesia. Dr. Boris D. Rapoport  
WALTER S. DENNING, *Secretary of Staff*

### WORCESTER DISTRICT MEDICAL SOCIETY

The program for the next meeting of the Worcester District of the Massachusetts Medical Society is as follows:

Time Wednesday evening March 18  
 Place The Memorial Hospital Belmont Street,  
 Worcester Mass.  
 Program 6 15 P.M. (promptly) Buffet Supper  
 7 15 P.M. Business Session  
 7 45 P.M. Scientific Program  
 (1) Postinfluenza Pulmonary Complications, Dr Oliver Stanaford.  
 (2) Round Table Discussion of Pediatric Prophylactic Measures. Drs Charles Sparrow Arthur Kimberly Haakall Talamo and Constance Kalliris  
 (3) Further Case Studies of Lumbo-Sacral Pathology as the Cause of Sciatica. Dr Charles Ayers  
 (4) Irradiation of the Ovaries in the Treatment of Carcinoma of the Breast Dr Richard Dresser  
 ERWIN C MILLER, M.D. Secretary

**PLYMOUTH DISTRICT MEDICAL SOCIETY**  
 The next meeting of the Plymouth District Medical Society will be held at the Plymouth County Hospital, South Hanson, Thursday March 11 1935 at 11 A.M.

## PROGRAM

- Surgical Treatment of Pulmonary Tuberculosis  
 1. Brief Summary of Surgery at the Plymouth County Hospital Bradford H Pearce M.D. Supt.  
 2 Statistics Roy F Littlehale M.D.  
 3 Pneumothorax John McCarthy M.D.  
 4 Case Reports E. K. Jenkins M.D.  
 5 Phrenic Operations Pneumolysis and Thoracoplasty G. A. Moore, M.D. Brockton.

Lantern slides and moving pictures.

Dinner at 1 P.M. G. A. Moore, M.D. Secretary

**MIDDLESEX EAST DISTRICT MEDICAL SOCIETY**  
 The next meeting of the Middlesex East District Medical Society will be held March 13 at the Middlesex County Sanatorium in Waltham and will be in charge of Dr Remick of that institution. Dinner will be served at one o'clock. Following the dinner there will be an inspection of the plant, and a discussion on the treatment of tuberculosis.

KENNETH L. MACLACHLAN M.D., Secretary

**BOSTON CITY HOSPITAL—STAFF CLINICAL MEETING**

A staff clinical meeting of the Boston City Hospital will be held Wednesday March 20 1935 at 8 15 P.M. in the Cheever Amphitheatre

## PROGRAM

Clinical Varieties of Neurosyphilis Presentation of Cases. By Drs H. H. Merritt and S. H. Epstein. Pathological Findings in Neurosyphilis. By Dr H. H. Merritt.

Treatment of Neurosyphilis. By Dr S. H. Epstein. Discussion Dr H. C. Solomon (by invitation) and Dr W. P. Boardman.

COMMITTEE ON HOSPITAL CLINICS

**HARVARD MEDICAL SOCIETY**

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Shattuck Street Entrance) Tuesday evening March 12 at 8 15 P.M.

## PROGRAM

## Presentation of Cases

A Trip Around the World by Airplane By Richard U. Light, M.D. New Haven Connecticut.

MARSHALL N. FULTON, M.D., Secretary

**SOCIETY MEETINGS, CONGRESSES AND CONFERENCES****CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY MARCH 11 1935**

Tuesday March 12—

- 1 30 P.M. Radio Program—WEEL "Control of Typhoid Fever"  
 12 30 4 P.M. Ward visit, Massachusetts Eye and Ear Infirmary  
 14 6 P.M. Seminar Pediatric Laboratory Massachusetts General Hospital.  
 4 30 P.M. Radio Program—WBZ. "Whooping Cough."  
 6 15 P.M. Harvard Medical Society, Peter Bent Brigham Hospital Amphitheatre (Shattuck Street entrance)

Wednesday March 13—

- All-day session, Greater Boston Medical Society Postgraduate Clinic Day at Beth Israel Hospital Boston.

Thursday March 14—

- 12 M. Clinico-Pathological Conference, Massachusetts General Hospital.  
 11 M. Clinico Pathological Conference, Children's Hospital.  
 3 30 P.M. Medical Clinic Dr Christian Peter Bent Brigham Hospital.  
 4 30 P.M. Surgical Clinic, Children's Hospital Amphitheatre

Friday March 15—

- 11 M. Clinical Meeting of Children's Medical Staff Massachusetts General Hospital, Ether Dome  
 5 P.M. Radio Program—WEEL Prepare for Summer Vacations.  
 6 30 P.M. The New England Roentgen Ray Society Dinner 6 30 P.M. Meeting 8 P.M. Boston Art Club

Saturday March 16—

- 10 12. Medical Staff Rounds. Dr Christian, Peter Bent Brigham Hospital

Sunday March 17—

- 4 P.M. Harvard University (Medical School, Building D Longwood Avenue Boston). Free Lecture. Facts Regarding the Control of Diseases of the Gums. Dr C. B. Vaughan.

Open to the medical profession.

Open to Fellows of the Massachusetts Medical Society

March 7—Faulkner Hospital Clinical Meeting will be held at 8 P.M.

March 8—William Harvey Society will be held in the Auditorium of the Beth Israel Hospital, Boston at 8 P.M.

March 8—Massachusetts Memorial Hospitals See page 460

March 11—Forest Hills General Hospital Staff Meeting See page 460

March 11, 12, 13—Surgeons to meet in Jacksonville Florida (Southeastern Surgical Congress) See page 43 Issue of January 10

March 12—Harvard Medical Society See notice above.

**MASSACHUSETTS DIETETIC ASSOCIATION**

March 12—Tuesday 8 P.M. "The Effect of Diet on Anemia." Dr Lewis Diamond, Instructor in Medicine Harvard University Medical School, Associate Physician Children's Hospital.

March 19—Tuesday 2 P.M. Field Trip Visit Store house First National Stores.

tion of 3 per cent to approximately 38 per cent. The increase is mainly in the calcium and phosphorus. The calcium increases 15 per cent of its initial value and the phosphorus 26 per cent." No values are given for the phosphorus content of the cataractous lens. The slit-lamp and corneal microscope detected crystals in the lens of a patient of Braun<sup>14</sup> which appeared like concretions of calcium phosphate. When the lens was extracted and subjected to analysis, no phosphate could be found.

In all the studies made on the cataractous lens very few analyses have been made of the lens of diabetic patients. In the series of forty-four in which Salit<sup>12</sup> determined the calcium content of cataractous lens, two only were diabetic. The calcium content of these lenses from diabetic patients was 19.1 mg per cent and 19.7 mg per cent respectively as compared with a range of 2.8-10.8 and an average for the group of 35.4 mg per cent. In the chemical studies of lipids in twenty-nine cases of cataract by Salit two patients had diabetes. The cholesterol content of the lenses of these two diabetics was 0.51 per cent and 0.61 per cent as compared with a range of 0.23 per cent-0.89 per cent and an average for the group of 0.61 per cent.

#### MATERIAL

This report is based on the chemical analysis of fifty-five human lenses of which ten were normal, thirty were cataractous lenses of non-diabetic patients and thirteen were cataractous lenses of diabetic patients, one was a lens with glaucoma and one a dislocated calcified lens. A determination of cholesterol, calcium and non-lipid phosphorus was done on each individual lens in most cases. The lenses were all removed in capsule. The normal lenses were obtained at the autopsy table except in the instance of the dislocated lens. The cataractous lenses were removed by operation at the New England Deaconess Hospital or the Massachusetts Eye and Ear Infirmary. Six flocculi cataracts in juve-

nile diabetics have been operated, but, because of the minute amount of material removed, no analyses have been made on them.

#### TECHNIC AND METHODS

The lenses removed in capsule were placed in paraffin lined ground glass covered containers and taken as soon as possible to the laboratory. Here they were quickly weighed; the early ones on a regular Becker analytical balance and the later ones on a Bang micro balance. The weights varied from 0.1384 Gm to 0.3189 Gm. The lenses were placed immediately in approximately 5 cc of redistilled 95 per cent alcohol and the containers tightly stoppered. As a rule the time elapsing between extraction and analysis has been from five to six hours. If the operation was performed at the Deaconess Hospital the time interval has been less than one hour. If the container is well stoppered the lens may be left for an indefinite period immersed in alcohol until analyzed. When ready to analyze, the lens material was crumbled in the alcohol with a small glass rod and transferred quantitatively to a small fluted hardened filter paper previously extracted with hot 95 per cent alcohol. When the filter paper was dried it was folded into a small packet containing the lens material and transferred to an extraction apparatus, where it was refluxed with alcohol for twenty-four hours. This time has been found adequate to remove all material giving the Liebermann Burchard reaction. A cholesterol determination using a modification of the Bloor, Pelkan and Allen<sup>15</sup> method was made in duplicate on the combined alcoholic extract. Analysis for calcium and phosphorus was made on the lens material which had been extracted with alcohol. The residue, left in the filter paper after the alcoholic extraction was transferred quantitatively and with extreme care to a small beaker. Here it was treated with concentrated nitric acid and gently warmed. When completely dissolved it was transferred quantita-

TABLE I  
NORMAL OR NON CATARACTOUS LENSES

No	Source	Weight of Lens in Gm	Cholesterol mg %	Calcium mg %	Phosphorus (Non Lipid) mg %	Ca/P Ratio
1	Autopsy	0.2982	313			
3	"	0.3144	398	10.0		
6		0.2617	398	9.2	12.6	0.7
11		0.3606	282	8.9	8.5	1.0
†19	"	0.2718	374	11.8		
23	"	0.2854	476	9.8	19.5	0.5
24	"	0.2582	510	13.9	17.3	0.8
93	Dislocated Normal Lens	0.2187	427	12.1	21.6	0.6
*275	Autopsy	0.2425	516	3.3	18.5	0.2
*289	"	0.2570	366	6.2	18.4	0.4
10	Averages	0.2681	406	9.5	16.5	0.6

\*Lenses from Patients with Diabetes.

†Other eye of this individual is number 20 with Glaucoma.  
(See Table V.)

TABLE II  
CATARACTOUS LENSES OF PATIENTS WITHOUT DIABETES

No	Character of Lens	Weight of Lens in Gm	Cholesterol mg %	Calcium mg %	Phosphorus (Non Lipid) mg %	Ca/P Ratio
13	Mature Cataract	0.2240	349	55.4	26.6	2.1
14.	Mature Cataract	0.3777	412	30.3	7.0	4.3
25	Cataract (Parathyroid tetany)	0.1609	622	52.0	13.8	3.8
47	Immature Cataract O S	0.3189	527	7.5	20.0	0.4
48	Mature Cataract O U O D extracted	0.0931	424	27.3	10.0	2.7
49	Immature Cataract O S	0.2484	451	11.3	30.5	0.3
50	Immature Cataract O S	0.1479	685	32.5	24.0	1.4
51	Mature Cataract O S Sec. Glaucoma O S	0.2071	395	73.4	38.1	1.9
52	Mature Cataract O S	0.0018	673	35.7	10.7	3.5
53	Immature Cataract O U O S extracted	0.1842	453	21.7	24.8	0.9
54	Immature Cataract O U O D extracted	0.1974	382	16.3	22.3	0.7
55	Mature Cataract O U O D extracted	0.3079	424	37.3	12.9	2.1
56	Hypermature Cataract O S	0.2185	430	29.3	12.3	2.4
58	Immature Cataract O U O D extracted	0.516	407	22.3	12.9	1.7
59	Immature Cataract O U O D extracted	0.3007	502	37.9	16.5	1.8
60	Immature Cataract O U O D extracted	0.1710	717	0.0	27.8	0.0
61	Immature Cataract O U O S extracted	0.1810	691	61.9	26.9	2.3
62.	Immature Cataract O U O S extracted	0.2222	572	3.6	25.4	0.1
63	Immature Cataract O U O S extracted	0.2138	619	29.9	21.5	1.4
71	Mature Cataract	0.1690	635	51.1	13.4	3.8
89	Nuclear Cataract O S	0.2548	463	3.3	19.5	0.2

cataractous lens of the non-diabetic has a phosphorus content slightly higher. The cataractous lens of the diabetic has a markedly reduced phosphorus content.

The following values for chemical constituents of the two lenses having abnormalities other than cataract are included in this paper. They are of no special interest in this report, but we are using this means of making the data available to the other workers who may be interested in studies of abnormal lenses.

#### SUMMARY

(1) Reports are given on chemical analyses for cholesterol, total calcium and total non-lipid phosphorus of ten normal lenses, thirteen cataractous lenses of diabetic patients, thirty cataractous lenses of non-diabetic individuals and two unusual abnormal lenses.

(2) The normal lens contains approximately 400 mg per cent cholesterol, 9.5 mg per cent calcium, 16.5 mg per cent phosphorus.

(3) The cataractous lens contains 522 mg per cent cholesterol, or approximately 20 per cent more than the normal lens.

(4) The calcium content of the cataractous lens is 31.6 mg per cent, a value three times the value in normal lens material or in normal blood.

(5) The phosphorus (non-lipid) found in the normal lens is 16.5 mg per cent and the calcium phosphorus ratio is 0.6 per cent. In the cataractous lens of the non-diabetic the average phosphorus value is 19.7 mg per cent, a value higher than in the normal lens; and the calcium phosphorus ratio is proportionately higher. In the cataract of the diabetic the phosphorus value is strikingly lower than in the cataract of the normal lens or of the lens of the non-diabetic individual. The average value is 6.2 mg per cent. The calcium phosphorus ratio is correspondingly high, 16.0 per cent.

The cataract forming in the eye of the diabetic appears chemically to be the classical senile cataract in all respects save one. The phosphorus metabolism is markedly different. What importance this has one does not know at present.

This study carried on over a period of three years was made possible by a grant from Mr and Mrs Francis P. Garvan and the Chemical Foundation.

The writer wishes to acknowledge the kind cooperation of Dr Elliott P. Joslin and Dr J. Herbert Waite throughout this study. I am grateful also to the helpful suggestions made by Dr Y. Subbarow and Dr M. A. Logan.

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## CHRONIC GASTRITIS\*

### A Clinical Discussion Based on Gastroscopic Examination

BY EDWARD B. BENEDICT, M.D.†

ACCORDING to Osler<sup>1</sup> "the term chronic gastritis is used loosely to designate a variety of gastric disorders, in many of which there are no actual changes in the mucous membrane. If the term is restricted to organic changes, it is a comparatively rare primary disease. Clinically it is not easy to draw the line between chronic gastritis and functional disturbance." More recently, Thomas R. Brown<sup>2</sup> writing in Cecil's Text-Book of Medicine states that "only when

the symptoms seem to be evidence of persistent chronic inflammatory changes in the stomach should the term 'chronic gastritis' be employed." Up to the present time, then, it is seen that the term has been vaguely employed and the diagnosis far from exact.

Few of us, however, will deny the existence of chronic gastritis. Stomatitis, esophagitis, duodenitis, enteritis, appendicitis, colitis, and proctitis are all terms in generally accepted use to day. The term gastritis, however, because of its loose meaning in the past, has fallen into disrepute. The development of the Wolf-Schindler flexible

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gastroscope has now placed at our disposal an easy and positive means for making an accurate diagnosis of gastritis, and the term is at last finding its rightful usage. For a general discussion of gastroscopy with the flexible instrument reference is made to Schindler<sup>4</sup>, Henning<sup>5</sup>, and Benedict<sup>6</sup>.

The etiology of chronic gastritis is not known but dietary indiscretions, rapid and irregular habits of eating, improper mastication, and excessive use of tobacco and alcohol are undoubtedly of importance. Chemical and bacterial factors may also play a part. Psychogenic instability, which seems to be significant in peptic ulcer probably also plays an important rôle in gastritis.

Chronic gastritis presents both gross and microscopic pathology. Gross changes consist in edema and reddening of the mucosa, excessive secretion of mucus, hypertrophy of the rugae, granular, verrucous (*état mamelonné*) or polyoid irregularity of the mucosa, areas of submucous hemorrhage, and mucous membrane hemorrhages with or without visible erosions. Other types of chronic gastritis show a thin atrophic mucosa. Microscopically there may be round cell infiltration, glandular atrophy, goblet cell metaplasia, cystic enlargement of gland remnants, and proliferative changes in the mucosa. Variations in the amount of connective tissue proliferation in different areas will lead to thickening or thinning of the mucosa.

The symptoms are notoriously vague. Distress, pain, nausea, vomiting, eructations, heartburn, gas, anorexia, and fulness may all be present in varying degrees, or largely absent. There is usually something however to direct attention to the stomach and the symptoms are occasionally very suggestive of peptic ulcer, with relief of pain by food or soda. In other words, as Henning says, "so-called ulcer complaints are in no way pathognomonic of ulcer." In my experience epigastric pain or distress has been the most constant complaint, gas, nausea, and vomiting are also of frequent occurrence. Hematemesis and melena are not uncommon. As to physical findings, the teeth are usually poor the tongue is often coated and there is frequently some tenderness in the epigastrium. Gastro analysis is said by some authors to show a low acidity in most cases but both normal and hyperacidity have occurred frequently in this clinic.

The diagnosis of chronic gastritis has rested heretofore on insecure foundations having been based largely on the rather indefinite symptomatology and the exclusion of other organic pathology by x ray. With the introduction of the flexible gastroscope, however, we now have an easy and accurate diagnostic method at our disposal, the examiner being able to inspect the gastric mucosa with great care and note varia-



FIG. 1. Normal pylorus

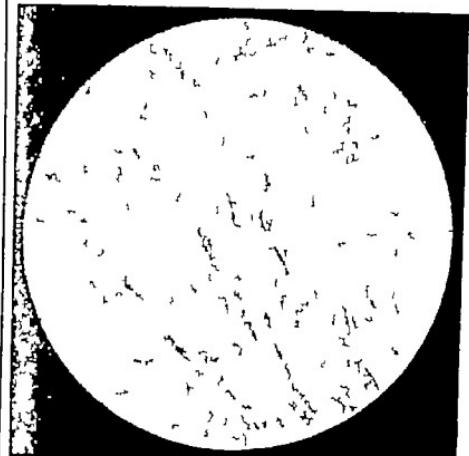


FIG. 2. Normal thin parallel rugae of anterior wall and curvature.

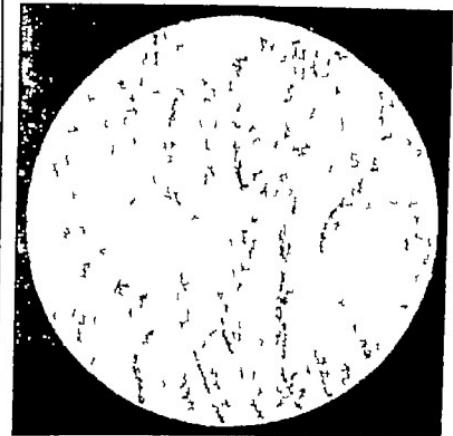


FIG. 3. Normal thick rugae of post. r. wall and greater curv.

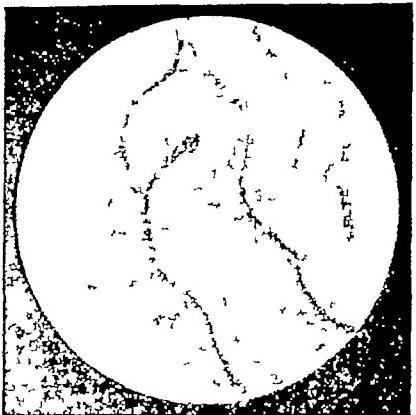


FIG. 4 Hypertrophic gastritis

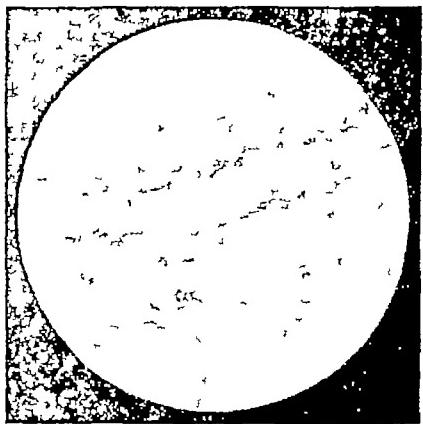


FIG. 5 Verrucous gastritis Irregular granular mucosa with warty elevations

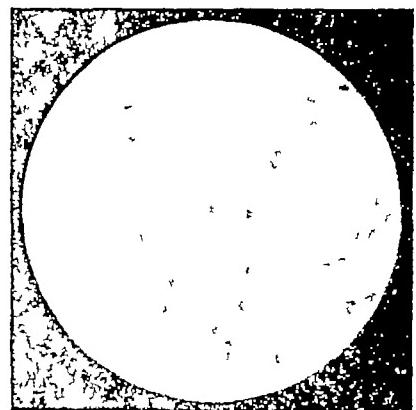


FIG. 6 Erosive gastritis Large erosion in centre of hypertrophied fold

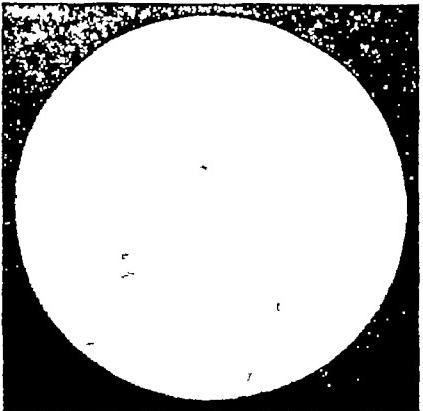


FIG. 7 Atrophic appearance seen especially in advanced pernicious anemia. Note the pale mucosa through which small blood vessels are plainly visible.

tions from the normal (figs 1, 2, 3\*) These may consist in hypertrophic (fig 4), verrucous (fig 5), erosive (fig 6), or atrophic (fig 7) changes, but, as different types may occur in varying degrees in the same stomach, a definite classification of chronic gastritis according to these terms is not possible in all cases. One may frequently note, however, that the predominant characteristic is hypertrophy or atrophy with or without erosions. The color and character of the mucosa are of very great importance, the color in chronic inflammation being a more intense red than normal, and the mucosa often presenting a very glistening appearance. Glairy, tenacious mucus may be prominent on the surfaces. The rugae may be enlarged and tortuous, with reddening of their crests. Not infrequently the mucosa between the folds presents a granular or warty appearance, which, if predominant, justifies the term verrucous gastritis. When these nodular formations are particularly marked, a polypoid appearance is sometimes presented. These pseudopolyps have occasionally been so large as to have caused an erroneous x-ray diagnosis of polyposis of the stomach. Atrophic changes in the mucosa are also easy to recognize, the normal folds are partially or completely flattened out, so the mucosa presents an unusually smooth surface. When inflamed, there is marked reddening and often glistening of the mucous membrane, but in advanced atrophy and anemia, as for example in pernicious anemia, the surface is very pale and thin, and against the pale background the arterioles stand out very clearly. In the normal stomach and in hypertrophic gastritis, owing probably to the thickness of the mucosa, blood vessels are not visible. Erosions may occur with atrophic or hypertrophic changes; they are small surface defects in the mucous membrane which may or may not be actively bleeding at the time of observation. Bright red areas of irregular size and shape may be seen in some cases just beneath the mucosa. These have been described as evidence of mucous membrane cataract, and may be due to changes in blood distribution or to submucous hemorrhage.

Very recently roentgenologists have been attempting the diagnosis of hypertrophic gastritis by the so-called "relief" method. By this method small amounts of barium are used, the abdomen is compressed, and an outline of the folds stands out in relief. Thus it may be possible to judge the size and course of the rugae, and when they are large and tortuous the roentgen diagnosis of hypertrophic gastritis is suggested. Gastroscopic confirmation is necessary, however, as there is no substitute for direct examination of the mucosa. I have seen cases where the rugae appeared hypertrophic and

\*Photographs taken from gastroscopic drawings made by Miss Muriel McLatchie. Photography through the gastroscope is possible only when a rigid instrument is used.

tortuous by x ray, and yet on gastroscopy, with moderate inflation of the stomach, the rugae largely disappeared and the mucosa appeared normal. In fact, hypertrophic rugae have been described by x ray when gastroscopy revealed a definitely atrophic mucosa. The granular appearance so characteristic of verrucous gastritis, and so easily seen by gastroscopy, is entirely missed by x ray examination. Small erosions also escape diagnosis by x ray. The two methods are of course supplementary, the x ray being better, generally speaking in large tumors and ulcers, and the gastroscope being superior in gastritis. Henning says, "Gastroscopy presents by far the most profitable method of examination in the diagnosis of gastritis."

Chronic gastritis may occur with gastric ulcer, duodenal ulcer, and gastric carcinoma, but perhaps of greater interest and significance is its occurrence alone as a definite disease entity. During the past year and a half a diagnosis of chronic gastritis as an accompanying lesion has been made by gastroscopy in many cases of peptic ulcer and gastric carcinoma. To date about 200 gastroscopic examinations have been conducted in this hospital, many of them for ulcer and cancer, but in forty patients in whom no ulcer or neoplasm was demonstrable by x ray, a diagnosis of chronic gastritis was made by gastroscopy.

No case report can be typical of chronic gastritis, as the picture is so variable. The following report, however, is presented as fairly characteristic of the disease.

J. De C., M. G. H. No. 316919 male aged thirty nine entered the hospital complaining of gnawing epigastric pain of three years duration. The pain was non radiating not very severe unrelated to meals and unrelieved by food. Soda had not been tried. For the past two years the pain had been periodic, coming on about every one to two months, associated with anorexia, nausea and vomiting. During the two year period there had been a loss of about twenty five pounds in weight. The patient was extremely nervous, smoked one and a half to two packages of cigarettes a day ate very irregularly and slept only five hours at night. There was no alcoholic history. Physical examination showed a well-developed and nourished individual with several teeth missing, definite pyorrhea, and some deep tenderness in the mid-epigastrium. Gastric analysis was not done after a regular test meal, but a vomited specimen showed a total acidity equivalent to 40 cc. N/10 NaOH. Gastrointestinal x ray was done three times, and showed spasm of the antrum of the stomach with slight thickening and distortion of the gastric rugae, the examination was considered negative. On gastroscopic examination, however the rugae appeared smaller than usual but were irregular in their course the mucosa was definitely granular justifying a diagnosis of verrucous gastritis. The treatment in this case consisted in a bland diet, belladonna dental attention, and general instructions regarding regular habits of eating, sleeping, defecation, exercise etc.

In general the treatment of chronic gastritis should be preventive and curative. Elimination

of alcohol and nicotine, and regulation of the patient's daily life will usually accomplish a great deal. A bland diet with frequent feedings at regular hours is of very great importance. Adequate rest and sleep, and freedom from excessive mental or physical strain are also very important. Dental attention can hardly be over emphasized, as it is of the utmost significance, not only from the mechanical point of view of proper mastication, but also from the point of view of focal infection. The tonsils and other foci of infection should also be treated. In severe cases, bed rest and gastric lavage may be necessary. Dilute hydrochloric acid or alkali therapy may be helpful in appropriate cases. Surgery, in the form of extensive gastric resection, has occasionally been performed for gastritis in Germany, but so far has not been considered necessary in this clinic. Operation may be justifiable in gastritis with pyloric stenosis, or when there is suspicion of malignancy. One must not be content to rest on the diagnosis of gastritis if there is any evidence pointing toward malignant disease. In this regard the following history is pertinent:

M. K. M. G. H. No. 337960 male aged forty five first came to the hospital on March 15 1934 complaining of stomach trouble of three months duration. The complaints were dull pain occurring an hour and a half after eating pain at night, anorexia, constipation and loss of ten pounds in weight. Carcinoma of the stomach was suspected, but x ray examination showed only enlarged rugae, and a diagnosis of hypertrophic gastritis was made. Gastroscopy two weeks later showed along the greater curvature and posterior wall "many large elevations and depressions giving the mucous membrane a warty appearance which was so marked in some places as to suggest malignant disease." The gastroscopic examination was not conclusive, however and more faith was placed in the x ray diagnosis. Moreover there was some clinical improvement on dietary management. Two months later however because of persistent symptoms and an x ray somewhat suggestive of malignant infiltration, exploratory operation was done and an inoperable carcinoma of the stomach was revealed adherent to the pancreas and infiltrating the gastrohepatic omentum. A large gland in the gastroduodenal omentum was removed for biopsy and showed metastatic colloid adenocarcinoma grade III.

Comment Any suspicion of carcinoma of the stomach by repeated x ray examination has always justified exploratory laparotomy. After this experience exploratory operation should also be indicated when malignant disease is suspected on gastroscopic examination.

As a complication of chronic gastritis, hemorrhage is of very great importance. Gross hemorrhage in this disease has been observed by many writers. To quote again from Henning "Although in the course of time a long series of observations has been assembled on the occurrence of gross bleeding in gastritis without ulcer, remarkably few clinics are aware of this fact Konjitzny and Puhl on the basis

of their very careful histological studies, have come to the conclusion that perhaps in all cases of so-called parenchymatous gastric bleeding a gastritis is present as the essential cause.

The author believes that gross gastric bleeding in gastritis is equal in frequency to bleeding from tumors and ulcers." Körbsch<sup>6</sup>, too, states "it is certain that gross bleeding can occur in chronic gastritis, and that hematemesis is no longer to be considered a sure sign of ulcer." During the past year at this hospital nearly one half the cases of chronic gastritis have given a history of bleeding. In these cases there has been definite hematemesis or melena, with red counts varying from two to five million, and negative x-rays of the esophagus, stomach, duodenum, and colon. Gastroscopy has shown varying degrees of gastritis in all cases, with erosions and actively bleeding areas in some. As an example of severe bleeding apparently occurring in chronic gastritis the following case is interesting:

A P B M G H No 332336, a fifty six year old single white American housekeeper, first entered the hospital September 29, 1933, complaining of dizziness and weakness of four days' duration. For one year she had had intermittent attacks of indigestion, consisting of cramplike epigastric pains, coming on shortly after eating and relieved by vomiting. There was no history of relief of pain by food or soda. Four days before admission there had been gross hematemesis and melena, with fainting. The red blood count on entry was found to be only 1.89 million. Improvement on the ward was rapid, and three weeks later a gastrointestinal series was done which showed hypertrophic rugae but no ulcer. Barium enema was negative. Gas trchoscopy, however, showed thickened, inflamed rugae with several erosions which could easily have been the source of the hemorrhage. A diagnosis of hypertrophic gastritis was made.

Second admission. About a year later (September 22, 1934), after dietary indiscretion, the patient again had an episode of bleeding and entered the hospital. The red blood count was 2.1 million. Gastrointestinal series now showed a duodenal ulcer. By gastroscopy gastritis was still present, though less marked than before.

**Comment** This history records (1) Gross hemorrhage from the upper gastrointestinal tract where, on the first admission, no demonstrable explanation could be found other than a chronic gastritis. (2) The development of a duodenal ulcer in a patient known to be suffering from a chronic gastritis. The question of the relationship of chronic gastritis to peptic ulcer is not yet solved, but it may be of significance in this case that the chronic gastritis apparently preceded the ulcer. Henning, although at first skeptical, states he has now observed a typical surface ulcer of the stomach develop from a small erosion in the course of four to six weeks, and Konjetzny<sup>7,8</sup> not only regards chronic gastritis as leading to ulcer but also be-

lieves that chronic gastritis may lead to carcinoma. Schindler\*, on the other hand, is inclined to regard the gastritis in such cases as secondary.

The prognosis in chronic gastritis must be guarded. As in peptic ulcer, there are likely to be remissions and relapses, though many patients are clinically entirely relieved after a short period of treatment. Such clinical improvement, according to Henning, is in striking contrast to the pathological changes which may still be evident on gastroscopic examination. In general, minor surface changes in the mucosa such as erosions, small areas of hemorrhage, and hyperemia, will heal completely without a trace, but "hypertrophic formations, such as granulations, verrucous humps, and pseudopolyps remain completely refractory." When, on the other hand, diffuse atrophy of the mucous membrane is present, there is probably little hope of regeneration, though in pernicious anemia in this clinic we have had some recent evidence of an improvement in the gastroscopic picture after intensive liver therapy. Henning believes that the ultimate prognosis in chronic gastritis will be based more and more on the pathological picture as seen gastroscopically.

In conclusion the following points should be emphasized:

Chronic gastritis is a definite disease, in the accurate diagnosis of which gastroscopy is the most valuable method of examination.

The importance of chronic gastritis lies not only in its existence as an independent disease, but also in its possible relationship to gastric ulcer and carcinoma.

Hemorrhage is a more common complication of gastritis than is generally supposed.

The development of the Wolf-Schindler flexible gastroscope has provided a safe and practical method for clinical and research use in this field.

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\*Personal communication. Professor Schindler is now doing gastroscopy at the Billings Hospital University of Chicago.

# NEW HAMPSHIRE MEDICAL SOCIETY

## SOME EXPERIENCES IN THE TREATMENT OF YOUNG DIABETICS\*

From the Point of View of the General Practitioner

BY BARBARA BEATTIE, M.D. †

“THE living diabetic child is the most outstanding medical accomplishment of the past decade.” This magnificent sentence, the first in Priscilla White’s book on diabetes in childhood and adolescence, is full of hope for the future and for me suggests the contrasts between the present era and my first two and a half years in medical school before the discovery of insulin. I will never forget the picture, stamped indelibly on my young mind, of those pre-insulin children, starving to death before our very eyes, in spite of the most expert scientific care and heroic deprivations, poor little stunted bodies with peaked faces and haunted eyes. The doctor, in those days, had to take from his diabetic children the very stuff life is made of and could offer them in its place only a meager existence for a few years, deprived of growth, strength, and all the carefree happiness associated with childhood. The average span of life for the pre-insulin child was two years!

And then the miracle of the ages for the diabetic happened! Insulin was discovered. Under the skins of those doomed children went the first doses of the life restoring substance they were allowed to satisfy their hunger again, at first cautiously for here was a potent preparation not understood very well by anyone in those days, but soon they were eating enough to make them grow and to restore the bloom of childhood to their faces.

To-day we have the diabetic child with us. We have proved that he can grow and develop normally and with but few exceptions lead a life as full and varied as his non-diabetic play mates. I say we have him with us. As Joslin points out, we are going to have him in ever increasing numbers, now that we know how to keep him alive. Every year adds another thousand to his group and every general practitioner practicing in a district where there are no specialists, will be called upon more and more to treat the diabetic child. It behoves him to become acquainted with some of the principles underlying the treatment, so that he can at least be an intelligent assistant to the specialist in the nearby city and can certainly instigate treat-

ment for coma while waiting for the specialist’s arrival. The principles involved are so few, so simple and so almost mathematical in their precision, that any doctor with a little study can master them and with them, master the disease.

For this reason I have chosen to write down some of my experiences with young diabetics, in the hope that they may be helpful to others with similar problems. I am far from a specialist in diabetes, though I have had some post graduate work in it and read everything available on the subject. But perhaps the fact that I am not a specialist and know the limitations put upon me by lack of expert knowledge and isolation from easy access to such knowledge, makes my experience of more value to the person in a position like my own.

The young diabetic has the characteristics of the adult suffering from the same disease and certain others peculiar to himself. He begins with the usual polyuria, polydipsia, polyphagia and polyuria, with their accompaniment of loss of strength and loss of weight. Much more often than his older fellow sufferer he plunges into his disease suddenly and it ravages his young growing body in a more spectacular way. His diabetes often seems acute in its early manifestations and it used to be a surprise to me that it could be so easily controlled with comparatively small doses of insulin.

Diabetes in children has I think, more pronounced nervous symptoms than in adults. I have learned and now teach parents to watch for irritability, restless sleep, explosive tantrums, as signs of breaking diet. One patient of mine who often went on a sugar spree, would invariably get so unpleasant around his home the next day that his mother, instead of scolding him for his bad temper, would wisely send him down to me for a scolding of a different sort.

In my experience, diabetes in the young is always progressive during the first few years. It gets worse rather than better until the child has had it for some time, when it appears to become stabilized. I have one patient, now nineteen years old, who has had the disease eight years. Until two years ago she had required gradually increasing amounts of insulin to take care of a maintenance diet. To be sure she was an inveterate offender against her diet and never gave herself a chance to build up her sugar tolerance. Now she seems to have steadied

A Prize Essay. Under the terms of bequests of Drs. Thomas J. W. Pray and Horace H. Burnham, the New Hampshire Medical Society awards prizes to its members for approved original essays upon some medical topic. This essay by Dr. Beattie won the prize for 1934.

\*Beattie, Barbara—Member of the New Hampshire State Board of Health. For record and address of author see “This Week’s Issue” page 481.

down to a constant dose, perhaps because the progress of her disease is arrested, perhaps because she is through with those trying adolescent years and perhaps because she has acquired some sense about taking care of herself. Most likely the reason can be found in a combination of all three.

But even with the children who are conscientious to a pitiful degree about their diets, the disease is still progressive. My most model patient got along beautifully for two years on twenty-five units of insulin a day, kept himself sugar-free and unlike most patients of his age, never had an insulin reaction. He was thirteen when he developed the disease. Now he is fifteen, maturing very fast, growing tall with a sudden spurt and within the past three months has had to be entirely readjusted to diet and insulin, the dose of which has increased to forty-five units. I know he does not break his diet because I put him to bed under close supervision for a week to rule out that possibility. He has not had any acute infection to aggravate his disease. Yet with no apparent cause, except the natural growing-up process, his diabetes has become worse. His blood sugar is more unstable, he spills sugar one day and has an insulin reaction the next. He illustrates very well the striking and spectacular change which comes over these children when they grow into adolescence. When I first began to treat diabetes, I could not believe it possible that the mere changes of puberty could account for such an aggravation of the disease. Now I know that they can. I think this point is not sufficiently emphasized in the literature.

As a matter of fact, instability of the blood sugar is the rule rather than the exception in young diabetics. It is one of the factors which makes them difficult to control satisfactorily. I always attempt to keep them sugar-free but find in actual practice that it is often impossible to keep them both sugar-free and reaction-free for the whole twenty-four hours. A fifteen year old patient of mine illustrates that point graphically. She has never, to my knowledge, been sugar free for any consecutive twenty-four hours and yet for a time she was having insulin reactions at eleven in the morning and again in the middle of the night. She has been a problem to adjust and long ago I gave up trying to keep her urine clear. Once, after a week of indulging in sweets, she nearly went into coma and had a blood sugar of three hundred. After six hours of intensive treatment, she went into insulin shock and her blood sugar was under fifty, though insulin had been given cautiously in small doses every hour and frequent urine tests always contained sugar. In her case, I have felt it more important to control her reactions, than to keep her sugar-free, because I think frequent insulin reactions are fraught with more danger than a mild glycosuria. And

furthermore, I believe that it is bad psychology for the young diabetic to get into the habit of nibbling sugar to overcome threatened reactions. It keeps a "sweet tooth" constantly stimulated and before anyone is aware of it, candy is surreptitiously substituted for the sugar. All my diabetics are taught to carry a lump of sugar with them at all times, but never to take it unless they have symptoms of hypoglycemia. It always pleases me, when I ask them about the sugar, to have them produce from the depths of a pocket a dirty crumbly lump which gives mute evidence of disuse!

The adolescent diabetic shares all the characteristics of his younger fellows but adds to them the instability and rebelliousness which go with his age. The "trying teens" are difficult enough in healthy children. But add to the usual ups and downs of adolescence the necessity of an irksome routine, which diabetes inflicts, and you have a situation which often makes scientific management practically impossible. These children are at the age when they resent discipline, rebel against restrictions and feel that they are perfectly able to run their own affairs. Yet the truth of the matter is that they have not yet learned self-discipline and thus have nothing to substitute for the home control from which they insist upon escaping. So far as their diabetes is concerned, they decide early to lead a short life and a merry one, though they know perfectly well that eventually they will pay for it. It has been amazing to me how tenaciously they hang on to this point of view, often going through several coma crises without appearing to learn anything from the experience. When I first began to treat diabetic children these adolescents nearly drove me out of my mind. I couldn't believe that they could be so stupid, so shortsighted and I felt that I must in some way be responsible for their lack of self-control. But now I have grown more philosophical about them and have learned that I must expect frequent dietary indiscretions.

Several years ago I learned a valuable lesson from Joslin. I sent an adolescent boy, who had successfully resisted all my efforts to treat him, down to Joslin with a letter describing the boy's diabetic indulgences in very graphic terms and ending with a plea to put some sense into his head before sending him home. I was amazed at the calmness of Joslin's reply, which said his diet was adequate, suggested a change in the insulin distribution and ended with a casual remark that it was too bad the boy didn't follow his diet more closely! I thought that letter over very carefully and realized once and for all that the boy's doctor could do just so much for him and after that it was all on his own shoulders. These children must learn to take care of themselves, in spite of the dangers they run in doing so and it certainly is a

bad thing to fuss over them too much. There is always the comforting thought to fall back on that if they do get into trouble, the pain and discomfort of acidosis will bring a humble call for the doctor. One of my patients, who was in open rebellion against the whole diabetic situation (with special emphasis on me) got her self into impending coma before she admitted she was ill and by the time I got to the house she was screaming to me that if I'd help her get her breath she would never break her diet again. I am sorry to report that she didn't keep her part of the bargain very long that time. She is now three years older and has apparently gained in wisdom, for she has kept out of mischief for a longer period of time than ever before since she developed the disease.

In the treatment of young diabetics I have certain general principles which I adhere to, varying them only slightly to meet the individual case. In the first place I always like to put them into the hospital for the period of adjustment to diet and insulin and to teach them certain fundamentals about their disease.

When the young diabetic gets into the hospital he is put at once on to a weighed diet containing, carbohydrate 200 grams, protein 15 to 2 grams per kilogram of body weight and fat enough to make up the required calories. Growing children require from 50 to 75 calories per kilogram, depending on their state of nutrition when the diet is begun. Most of them in the early weeks of treatment, need to be "fed up", but later on when normal weight has been resumed, their diets must be reduced to prevent overweight. Overweight must be assiduously avoided in diabetes, since it has been repeatedly shown to aggravate the disease.

My goal, then, in beginning adjustment of the young diabetic, is to give him an adequate diet immediately, high in carbohydrate and low in fat, according to Joslin's teaching that low fat increases the patient's ability to utilize sugar and helps to prevent some of the complications of diabetes.

All young diabetics need insulin. The dose is at first experimental beginning with 3 to 5 units three times a day and increasing according to the urinary findings. And right here I would like to make a point which I believe most physicians who have had no experience with diabetes, don't realize. It is possible, in fact better medicine to adjust a diet to insulin without the use of frequent blood sugars. Blood sugars, while invaluable in the diagnosis of both hyperglycemia and hypoglycemia, are after all a fleeting picture of the amount of sugar in the blood at a given moment. One or two hours later the situation may be entirely changed. Moreover, they involve the unpleasant procedure of sticking a needle into the child and for that reason should not, I believe, be done any

more often than is necessary. And of course, they involve a specialized technique which is not available to many practitioners.

On the other hand, Joslin's four period urine tests tell a much more striking story of the patient's ability to use the food given, with the help of the insulin, during that particular day. These specimens are passed before breakfast, about eleven in the morning, four in the afternoon and at bedtime. A simple test, the quantitative Benedict's reaction, is done on each one the amount of urine measured, and thus an accurate determination of the sugar spilled is obtained. After observing these tests for a few days, it is a very simple matter to decide when to give the largest dose of insulin and how many doses are needed. I cannot over emphasize the value of this procedure in treating diabetic patients.

Diabetic diets are simple and easy to compute. I believe all children must have milk, about a pint and a half a day. They need raw as well as cooked vegetables and I think it wise to give them cod liver oil, to make sure they get the fat soluble vitamins in sufficient quantity. I never allow them to use saccharin for artificial sweetening because I believe it is much kinder to the child to get him over his "sweet tooth" as rapidly as possible, inasmuch as he is going to be deprived of sweets for an indefinite period of time.

I am going to give a sample of the diet of one of my diabetic children. I figure these diets using standard values from Joslin's diabetic card. I don't try to remember the amount of carbohydrate, protein and fat in the various foods. I remember only the general principles upon which I wish to base the diet, and then juggle the values until I get the desired result.

This boy, who is now on the diet, is fifteen years old, five feet five inches tall (illustrating the point which Priscilla White makes that diabetic children are tall for their ages) and weighs one hundred and three pounds. I want him to gain about fifteen pounds. Consequently I have him on a diet of carbohydrate 197 grams, protein 112 grams fat 140 grams, calories 2700. He takes 35 units of insulin in the morning and 20 units at night. His diet is distributed as follows:

	Breakfast	Dinner and Supper
Shredded wheat	one	Potato _____ 90 Gm.
White bread toasted	30 Gm	Meat _____ 75 Gm
Egg	one	Vegetables (10%) 75 Gm (Raw twice weekly)
Bacon	15 Gm	Vegetables (5%), 150 Gm (Raw twice weekly)
Cream	90 Gm	Cream _____ 30 Gm
Grapofruit	00 Gm	Butter _____ 10 Gm
Butter	10 Gm.	Orange _____ 150 Gm.
		Cream cheese _____ 15 Gm

Lunch in A.M., P.M. and before bedtime  
One-half pint milk and two Uneeda biscuits

When I put this boy on his diet I made him stick to it just as it is. After I found out that he was conscientious and reliable, I allowed him to make several substitutions, to give him the idea that he could have variety and that I considered him responsible enough to have something to say about it himself. So I gave him the following list of equivalents:

One shredded wheat, equals— $\frac{1}{2}$  shredded wheat plus 50 Gm banana  
 One shredded wheat, equals—15 Gm oatmeal (dry) plus 50 Gm banana  
 200 Gm grapefruit, equals—100 Gm orange, or 75 Gm apple, or 75 Gm blueberries, or 75 Gm raspberries, or 75 Gm of pears  
 90 Gm potato, equals—90 Gm boiled rice, or 90 Gm boiled macaroni, or 90 Gm baked beans, or 90 Gm green corn

As soon as this boy gains the amount of weight he needs, I shall cut down on his fat until I get him on to a maintenance diet, which I expect will be about 100 grams of fat. His protein also is slightly higher than I usually give and that will be reduced when he has made the necessary gain.

One of the most important phases of the early hospital period is teaching the diabetic child to take care of himself. I feel that it is an obligation on the part of the physician to see to it that these boys and girls understand their disease. The older children, while in the hospital, can read Joslin's Manual for Diabetics and each day when the doctor makes a visit, one chapter or one phase of the subject can be discussed. It is amazing how interested they get and I have never seen a child become morbid as a result of the knowledge he acquires. He also has a chance to watch the preparation of his food in the diet kitchen and before he goes home he himself weighs it several times under supervision until he learns to do it accurately. He is taught how to measure his insulin, the most favorable spots for injections, and the care and sterilization of the syringe. I used to feel some trepidation when a ten year old first started to give himself insulin, but now that I know that children can do it with greater nonchalance and precision than adults, I have ceased to worry.

After the child has become accustomed to the everyday routine of his life as a diabetic, I teach him the two dangers which he is likely to encounter. These are coma and insulin reactions. I believe, with Priscilla White, that a diabetic should be "trained so thoroughly to avoid coma that, barring an infection, its development should be considered a disgrace." I try to make them understand, that after I have adjusted their diet and insulin, the responsibility is theirs and except for some unusual circumstance, my function from then on is advisory. They are their own doctors, I am merely the consultant.

I make a great point of intercurrent infections in my talks with these diabetic children, emphasizing the fact that any illness they may have will automatically make their diabetes worse while it lasts. For this reason they must avoid so far as possible exposure to contagious diseases of all kinds. And if they do at any time feel ill they must go to bed at once, take their insulin, unless the urine is sugar-free, even if they can't eat anything (this is very important because most people would omit insulin if they couldn't eat in the fear of insulin reaction), take an enema, drink copiously of hot liquids and send for me.

As a matter of fact I find that my young diabetics, who keep to their diets, are a most healthy group and seldom pick up the usual run of respiratory conditions which periodically go the rounds. I have never seen any explanation of this observation but probably it lies in the carefully supervised and controlled diet on which they live.

The other danger which the young diabetic is subject to is hypoglycemia. It is the rule rather than the exception and I tell them early that they undoubtedly will experience an insulin reaction sooner or later. They learn the symptoms which are nervousness, trembling, headache, double vision, sweating, and are told to drink the juice of an orange if any of these occur. They all carry a lump of sugar at all times and know that a reaction may come on suddenly at any minute, especially when they are taking excessive exercise.

When they have acquired the knowledge of their condition, they are ready to take their places in a normal world with very little handicap. The diabetic illustrates beautifully the truth of the saying "Knowledge is Power." I would not feel I had fulfilled my obligation to my patients, if I failed thus to arm them against the perils to which they are heirs.

Of course in the little children, one must educate the parents to take all the responsibility, teaching the child as fast as he is capable of learning. And that is much faster than anyone who has not had experience with young diabetics would believe. In Priscilla White's book on Diabetes in Childhood, there is a picture of a mere baby, two years and eleven months old, giving herself a dose of insulin!

In discussing the treatment of coma in the young diabetic there are certain things I have learned, more from experience than from books, which I would like to stress because I believe they will be helpful to the general practitioner. In the first place, since I have no laboratory technician available, and have to do my own blood sugars, I never stop to do one until I have the patient well started on his treatment. I much prefer to get him into the hospital, but failing that, I get a nurse to help me in the home.

Coma is an emergency demanding immediate and drastic treatment. The outcome is directly dependent on the rapidity with which treatment is instigated. The aims of treatment are directed toward overcoming the acidosis, combating the dehydration, and supporting the circulation. It is well to remember always that a patient does not die from sugar in the blood and urine. He dies, if he is allowed to, from the resulting acidosis, dehydration or circulatory failure.

Consequently, insulin is given to overcome the acidosis. By burning up the sugar circulating in the blood, it allows the incompletely oxidized acetone bodies to burn up also. A beautiful example of the graphic phrase, "Fat burns in the fire of the carbohydrates."

Insulin should be given, I believe, in comparatively small doses, but frequently. In a child who has been on insulin before, I give from ten to twenty five units every half hour. In a child who has never taken insulin, I am more cautious, giving five units as the first dose and then ten or fifteen every half hour. The effect of these doses can be determined by the urine tests for sugar and acetone bodies (urines should be done every two hours during coma, catheterized if necessary) and by the character of the breathing. I have come to depend so much on the story the breathing tells me, when I am so busy treating coma, that I can't stop even to do urines, that I almost believe it possible to bring a patient successfully out of danger by observing that sign alone. The characteristic air hunger with its deep rapid breathing which always accompanies diabetic acidosis, becomes gradually slower and less deep as the patient's condition improves. Insulin shock can never develop while air hunger is still present, nor can the patient become conscious again until it is improved. Thus it is possible to watch the effect of treatment and to increase or decrease the dose of insulin as needed.

Second only to insulin in importance is the giving of fluids to combat the dehydration which is always present. I believe it is never wise to depend on the oral route of administering fluids, since vomiting is easily induced and absorption uncertain. A hypodermoclysis of normal saline is begun immediately and from 500 to 1500 cc. are given, depending on the size of the child. Except in cases of collapse it is not necessary or wise to give intravenous fluids. If the child has not come out of coma and begun to take and retain fluid by mouth the clysis should be repeated in six hours.

The next thing to be done is to wash out the stomach. I believe this procedure greatly adds to the patient's chances of recovery, for it prevents a frequent and distressing complication, that of acute dilatation of the stomach. Furthermore, it rids the stomach of all undigested

food and thus shortens the vomiting period. I use normal saline, washing until the return is clear and repeating the procedure in four to six hours if vomiting, or dilatation, is still present.

A hot enema is always given early and repeated if necessary. These two measures, the lavage and the enema, help to restore the tone of the intestines which seem, sometimes, practically paralyzed. They should never be omitted.

While this drastic and hurried treatment is going on, the patient is handled very carefully and kept warm with blankets and hot water bottles. One should never forget that a person in diabetic coma is *in extremis*, fighting for life, and consequently must receive the gentlest possible treatment.

After the above measures have been properly dispatched, there is time to stop and take stock of the situation. The first question I ask myself is How is the circulation standing the strain? A rapid, weak, thready pulse, possibly irregular, calls for stimulation. In that event, I give caffeine sodium benzoate and ephedrine sulphate by hypodermic every two hours alternately. I have learned from bitter experience that a patient may be successfully brought out of coma only to die from circulatory failure. My experience was with a young woman who had been in coma thirty hours before I saw her and, after eight hours of intensive treatment, recovered consciousness. However, her heart failed to respond to circulatory stimulation and she died twenty four hours later from heart failure.

The second question I ask myself is How are the kidneys standing the strain? As soon as I can, I do an albumin and a microscopic examination to gauge the amount of kidney damage or irritation. But more telltale in the emergency which exists, is the amount of urine put out by the patient. Every specimen passed or obtained by catheter, should be measured and tallied against the amount of fluid given by clysis. If after six hours, the elimination by the kidney is defective an attempt to produce diuresis can be made by giving a five per cent glucose solution subcutaneously or a twenty per cent solution intravenously. In the latter, the injection must be slow and the total fluid given, not more than 150 cc. in small children or 350 cc. in older children, because of the strain on the circulation.

Even if the kidney is sluggish in its output, one cannot stop giving fluids to a patient in diabetic coma, for an attempt must be made to overcome the dehydration, if life is to be saved. Sometimes, though not often, one seems to be between the Scylla of poor kidney function and the Charybdis of dehydration. There is no choice, however, but to go on giving fluids and hope that the kidney will respond.

As the child's condition improves and he begins to come out of coma, the interval between doses of insulin is lengthened, first to one hour, then to four. Careful watch must still be maintained, however, for lapses have often occurred. Frequent urinary sugar tests, with acetone and diacetic acid determinations, make it possible to judge the progress of recovery and to adjust the insulin accordingly.

At this stage I begin giving orange juice, ginger ale, clear broth, clear tea or coffee in small amounts (about an ounce at first) by mouth every hour. If retained, the amount is increased and the interval lengthened. Twenty-four hours after recovery from coma I give a child half his usual diet but minus all the fat and watch his four period urine tests. The next day he gets his full diet except for the fat, and the third day he is restored to his pre-coma basis, but usually requires more insulin to keep sugar-free. The added insulin necessary I give in the middle of the day and try to drop it out as soon as possible.

With the employment of the above measures, I believe nearly all children in coma, or impending coma, can be saved. They are simple and can be used by anyone, even in remote districts where hospitalization is impossible. I would like to stress again the importance of the element of time in treating these cases. Every hour lost multiplies the chances of failure by a geometric ratio. And another point to be stressed is the absolute necessity of constant, watchful care on the part of the physician, until the fight has been won. I never leave a child in coma until he is safe on the road to recovery.

The question of surgery and diabetes demands careful attention. Whenever a surgical condition is superimposed on diabetes, the diabetes immediately becomes severe. A child with acute appendicitis, may go into coma in a few hours and the symptoms of the underlying cause of the coma be so masked, that a correct diagnosis would be impossible. To make the problem more difficult, the differential diagnosis between acute appendicitis and impending coma is often extremely obscure. Vomiting and abdominal pain are often present in both. A leukocytosis is present in both. To be sure the abdominal pain and tenderness are more diffuse in coma than in appendicitis, but one cannot rely too much on this sign. I believe it wise to take into account a history of previous attacks, the fact that appendicitis associated with coma is rare compared with the existence of coma alone, and then, if a surgical abdomen is suspected, to make a small incision under novocain and take a look at the appendix. If pathology exists it can be remedied, if not, the patient suffers little from the procedure. This is the teaching of Joslin and his surgical associates, and is, it seems

to me, as reliable as all the teachings from his vast experience are known to be.

In preparing the young diabetic for operation, it is always necessary to give extra insulin with glucose to insure a storage of glycogen in the liver, which can be called upon to combat the acidosis incident to the operation. If there is plenty of time to get the patient ready, I usually give him twice as much carbohydrate the day before his operation with half again as much insulin. I cut the fat out both before and after the operation. I do not try to keep him sugar-free, but concentrate on giving him plenty of available glucose to fight the acidosis which would certainly otherwise develop as the result of the anesthetic, the surgery, and the postoperative period of starvation.

After the operation, the diet is at first similar to that used for the child recovering from coma. Orange juice, oatmeal water gruel, ginger ale and skimmed milk, are allowed in small amounts, every fifteen minutes. The usual dose of insulin that the patient has been on, is divided into four hourly doses and given that way, irrespective of meals. Using the four period urine tests, one can judge the adequacy of this amount of insulin. If two successive tests are sugar-free, the next dose should be omitted and resumed only after two tests again show sugar.

In the days that follow, the diet is gradually increased, adding first the carbohydrate and protein constituents and leaving the fat to be added after the danger of acidosis is over. Diabetes, if thus protected, are good surgical risks and one should never hesitate to have necessary surgery done on a child because he has diabetes. In fact, I think the reverse is true—in the presence of diabetes, when surgery is indicated, the need is more urgent and acute than in a person whose carbohydrate metabolism is normal. This applies to the simplest conditions, such as infected tonsils and teeth as well as to the more serious mastoids and appendices.

The young diabetic, subject though he is to infections, to surgery, to lapses of diet and to rapid and upsetting growth, can now be saved to live a normal and productive life. I know of nothing in all the practice of medicine so satisfactory to me as helping him to take his place in the world in spite of his handicap. Though I have had my troubles with the ones who insist upon skating along on thin ice for years, often getting me up at night to snatch them out of impending coma, never appearing to appreciate my concern for their lives, I still find that if I have the patience to put up with it long enough, they always come through in the end. Just the other day I had a letter from one of my young patients who is now away at school. He led me a merry chase for three years, during which time he was in and out of coma on the average of once in ten months. He never stuck to his

diet. He had a severe diabetes, requiring sixty five units of insulin to cover his diet. Quite suddenly, when he was seventeen years old, after four years of diabetic irresponsibility, he turned over a new leaf and began to take care of himself. He stuck to it for a year and when he wanted my sanction on going away to school, I gave it to him with justifiable confidence. His record at school couldn't be better, either academically or scholastically. Furthermore, he is a leader in the school, on the debating team, editor of the school paper, and in the orchestra. He doesn't think of himself as handicapped any longer and consequently has lost all the rebellion which used to make life so difficult for him. He does everything the other boys do in fact "bummed" his way home for vacation to save the carfare to go to dances! The letter he wrote me was to tell me about winning a prize contest, sponsored by the Gorgas Institute in Washington. His ambition, at present, is to be a doctor.

I take no credit whatsoever for his change of heart. I am only thankful that I was "Johnny on the-spot" when he needed me in those trying adolescent years. The young diabetic deserves that from his doctor and I wish that more general practitioners would become interested in insuring the lives of these children with diabetes.

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#### MISCELLANY

##### RECENT DEATHS

**PRATTE**—ARTHUR A. PRATTE, M.D. of Keene, died Monday February 4 1935 in Keene. He had practiced general medicine in Jewett, Conn., Marlboro and Hinsdale in New Hampshire before going to Keene twenty nine years ago where he specialized in diseases of the eye, ear, nose and throat. Dr. Pratte was a member of the Board of Health for many years and health officer about a year. It was through his efforts that a full-time health officer was recently provided in Keene. He was a member of the Cheshire County Medical Society and of the New Hampshire Medical Society of which he was a councilor.

**TAYLOR**—FRED B. TAYLOR, M.D. of Concord, died suddenly January 24 at the Margaret Pillsbury Hospital. He was educated in the local schools Andover Academy Sheffield Law School of Yale University

and Tufts College Medical School. He was affiliated with the New Hampshire Medical Society and was a member of the bar in both New Hampshire and Massachusetts. For five years he was physician at the State Prison and also served a term as a member of the Legislature.

#### COUNTY MEETINGS

The Belknap County Medical meeting was held at the Laconia Tavern, February 19. Dr. Francis Rackemann Professor of Allergy at the Harvard Medical School was the principal speaker. Dr. Rackemann talked on "The Cause and Treatment of Asthma and Eczema." His address was illustrated with lantern slides.

A special meeting of the Nashua Medical Society was held at St. Joseph's Hospital February 19. The Society approved the stand of the American Medical Association in opposing the compulsory sickness insurance plans being studied by the President's Committee on Economic Security and went on record as opposing compulsory sickness insurance. Dr. Deering G. Smith, delegate from New Hampshire to the American Medical Association gave a report of the meeting of the House of Delegates which was held February 15-16 in Chicago.

#### TUBERCULOSIS CLINICS

Dr. Robert B. Kerr of Manchester held a tuberculosis clinic at Laconia, February 11 and at Newport, February 15. One positive and two suspicious cases of tuberculosis were found among thirteen new patients examined at Newport. Improvement was noted in the general physical condition of many patients reexamined.

#### CANCER CLINICS

During 1933 the State Cancer Commission allocated funds to the State Board of Health to establish free diagnostic cancer clinics. The Commission has designated the Elliott Hospital, Manchester, the Margaret Pillsbury General Hospital, Concord and the Mary Hitchcock Memorial Hospital, Hanover as treatment centers and the radium purchased by the Commission has been divided among these three hospitals each having one or more physicians on the staff who have been trained and had experience in radium treatment.

#### NURSES

A report of visits made by nurses of the Keene District Nursing Association was submitted by the Superintendent of Nurses Miss Anna C. Savage, at the quarterly meeting January 9 1935. Miss Savage reported 1950 visits during the past quarter. Of these 539 were medical, 91 surgical, 149 obstetrical, 126 newly born, and 146 welfare.

The annual meeting of the Meredith Public Health Association was held January 15 at the Nurses Room. Miss Eva Heeney District Nurse, made a report of

her work for the year, showing 861 regular visits and many others, advisory, prenatal, etc., making a total of 2807 visits.

Miss Della Robbins, Marlboro School and District Nurse, spoke on the health of the preschool child at a meeting of the Symonds preschool group, kindergarten and first grade pupils' mothers, January 25, at Keene.

Miss Velma V. Pettiner, Supervising District Nurse for the Portsmouth District Nursing Association, in her report for the month of January, announces the number of visits made as 222,—169 of these being on nursing work, 38 prenatal.

The February meeting of the Visiting Nurse Association of Rochester was held at the Board of Health room, February 22. Public health nurse report for the month of January showed 98 cases with 225 visits.

The report of the Nursing Service in Lincoln for 1934 made by Miss Addie Lessard, Public Health Nurse, was social service visits, 307,—total visits to homes, 1,729.

#### PERSONAL ITEMS

School teachers of West Swanzey, the Superintendent of Schools of the Swanzey district, State Commissioner of Education, James N. Pringle, and members of the Swanzey School Board joined in a dinner at Winthrop Lodge, Tuesday, January 29, to honor Dr. A. W. Hopkins of West Swanzey who has been a member of the town board of education for twenty five years. The teachers presented Dr. Hopkins with a pen and pencil set and Mrs. Hopkins with a bouquet of flowers. Dr. Hopkins was primarily responsible for raising the Swanzey school system to its present high standing.

#### DEFICIENT HOSPITAL AND HEALTH SERVICE

Thirty one million persons in the United States live in areas which are seriously deficient in hospital and health services, according to a nation wide study made by Alden B. Mills, managing editor of *The Modern Hospital*. The results of the study were published in the March issue of *The Modern Hospital*.

The Mills study continues one made last year by Michael M. Davis of the Rosenwald Fund, which revealed that about 1,300 of the 3,073 counties in the United States have no general hospitals at all.

The new survey points out that some counties do not need general hospitals since they are or can be served by hospitals in adjacent counties if the distance is not greater than fifty miles. Consequently in this study the United States is divided into areas with approximately fifty mile radii.

After careful study of all factors involved it was decided that rural populations require a minimum of two hospital beds per thousand population although the study does not recommend or consider practical the building of general hospitals of less than twenty-five beds. For areas not requiring at least twenty-five-bed general hospitals, it is suggested that "cot-

#### HOSPITALS

According to data compiled by the American Medical Association last year, New Hampshire has 45 registered hospitals with 4,735 beds and 325 bassinets, and 31,597 patients were admitted during the year. These figures do not include the thousands of out patients who received treatment.

The widespread accomplishments and activities of the Hospital Aid Society of Cheshire County as an important aid to the Elliot Community Hospital and Keene Visiting or District Nurses' Association were reviewed at the annual meeting in the Nurses' Home recently. Mrs. Richard L. Holbrook was re-elected President. Miss Louise H. Thompson, Hospital Superintendent, expressed her personal thanks and that of the trustees and staff for the many extra services rendered by the society in the way of physical equipment, the furnishing of reading materials for patients and other helpful work.

"The chief accomplishment at the Laconia Hospital during the past year was the building of the east wing," states the annual report of Miss Lillian G. Williams, Superintendent, submitted at the annual meeting of the Laconia Hospital Association. The addition of the twenty-three bed wing increases the capacity of the hospital to eighty adult beds. During the past year, 2,179 patients have been treated.

#### NEW MEMBERS

J. Anderson, Somersworth  
Edna Walck, Dover

tage hospitals" or central medical service offices be established. This study also covers the distribution of physicians in the United States.

The study shows that there are 31,000,000 people and 29,000 physicians in areas that contain less than two hospital beds per thousand population and are more than fifty miles from a hospital center, there are 1,117,915 persons and 896 physicians in areas that have less than one-fourth of this ratio (0.5 hospital beds per thousand population), that there are 147 such 100 mile areas in the United States which have fewer than two hospital beds per thousand population, and that there is an actual need of 22,000 additional hospital beds in these 147 areas if minimum standards are to be met.

Individual states which have largest needs for additional beds are Texas, Alabama, Tennessee, Georgia, Mississippi, Kentucky, Missouri, Louisiana, Arkansas, Oklahoma, and North Carolina. Also there is revealed a serious deficiency of hospital facilities in some areas in western Kansas, parts of Virginia, South Carolina, Illinois, Ohio, Indiana, and Florida.

No large area deficient in hospital service exists in the New England States, according to this survey.

**CASE RECORDS***of the***MASSACHUSETTS GENERAL  
HOSPITAL****ANTEM MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES**

EDITED BY RICHARD C CABOT, M.D.

**CASE 21111****PRESENTATION OF CASE**

A forty eight year old American housewife entered complaining of epigastric discomfort.

She was first seen by her physician ten years before entry for symptoms that were associated with constipation and fatigue. Two years later she complained of epigastric fullness which often woke her at night, especially if she had eaten when fatigued. This sensation was relieved by induced vomiting or by Bellans pills. Complete x ray studies were negative. When seen four years later, approximately four years before entry, she complained of indigestion and a dull pain beneath the sternum which were relieved sometimes by food and always by soda or belching. She was frequently awakened at night by epigastric pressure and pain which were relieved only by vomiting. There was no hematemesis or food stasis. It was believed that her symptoms were associated apparently with undue tension and fatigue. Seven months before entry she reported again that she was well except for the epigastric discomfort which often woke her at 2 a.m. Constipation was quite marked and she had a good deal of gas daily. Vomiting still relieved the sensation of fullness. A simple régime helped her somewhat. A few weeks before entry she returned from Europe, having had a rough voyage associated with sea sickness. This was followed by an epigastric gnawing sensation which was relieved temporarily by food but which persisted however, for several days.

Physical examination showed a well-developed and nourished, healthy looking woman. Examination of the chest was negative. Abdominal examination was also negative. There was no tenderness or mass.

The temperature was 99.4°, the pulse 84. The respirations were 20.

Examination of the urine was negative except for an occasional white blood cell.

X ray examination of the intestinal tract showed that the stomach filled in the usual manner. There was no change in peristalsis and no stasis. In the pyloric end of the stomach close to the sphincter, there was a break in the outline with a small but distinct projection of barium in which there appeared to be the crater

of an ulcerated area around which the barium had a mottled appearance. The sphincter was not deformed and the duodenal bulb appeared normal. Six hours after the meal the head of the barium had reached the splenic flexure.

On the fourth day an exploratory laparotomy was performed. Just above the pylorus on the posterior superior surface of the lesser curvature of the stomach there was a small amount of flexible thickening. A small crater may have been present, but it was very doubtful. The condition appeared so recent to the surgeon and there was so little evidence of an ulcer that it was considered unwise to do a resection at that time. It was felt that careful x ray studies within the next three months was a more reasonable treatment than excision.

The patient's symptoms gradually disappeared under an ulcer régime and the stools were persistently negative for occult blood. Further x rays three weeks later confirmed the previous observation. There was a definite variation from the normal on the lesser curvature close to the pyloric ring. Peristalsis was absent and a small crater could be demonstrated. A comparison with the previous films showed very little change. The crater like deformity was possibly slightly smaller. Her symptoms continued to diminish. Another x ray was done two weeks later. There was distinct change in the appearance of the prepyloric lesion. The crater had disappeared but the indurated area persisted. This could be demonstrated by failure of the peristaltic waves to pass over the lesser curvature side of the antrum and absence of the normal gastric rugae in this region. There was also a small residue at the end of six hours. Reexamination with a spot film confirmed this finding and showed in addition a suggestion of an ulcer crater. Because of these findings a second operation was performed and the pylorus resected.

The patient was last seen ten months after operation and was in apparent good health.

**CLINICAL DISCUSSION**

DR CHESTER M JOYES. She was an extremely neurotic individual very unstable, fatigued very easily and no doubt many of the symptoms of indigestion were functional in nature. However indigestion occurring repeatedly at two o'clock in the morning must always be regarded from the point of view of organic disease. If the patient is awakened from a sound sleep by indigestion I think it has to be treated with greater respect than when noticed while awake.

On her arrival in this country she had a return of indigestion which had been absent while in Europe. This time she described it as "an epigastric gnawing sensation which was relieved temporarily by food but which returned how-

ever, for several days" Her story was somewhat different at this time It suggested an ulcer story more than at any other time in the history except for the statement a little previously that she had been awakened by pain in the early morning

Physical examination did not help much The numerous stool examinations were negative and the urine was also negative

#### X-RAY INTERPRETATION

DR GEORGE W HOLMES This is the x-ray film taken at the time of the examination, the report on which Dr Jones has just read and here you can see the ulcer You will notice that it projects beyond the outline of the stomach, has a characteristic crater, and a somewhat thickened margin, as shown by the decrease in the density of the barium at this point The pyloric sphincter is apparently not involved and there is no change in the cap or the duodenal loop The remaining portion of the stomach appears normal I should like to call your attention particularly to the location of the ulcer It is within one inch of the pyloric sphincter

#### CLINICAL DISCUSSION CONTINUED

DR C M JONES After the x-rays were taken the matter was considered by the doctor and he felt that it was advisable to consider surgery on the basis of an ulcerating lesion in the prepyloric region which might be malignant That was agreed to and an operation was performed

The patient had an uneventful convalescence after the operation and was placed on an ulcer regime at this time The stools were negative During this time it is important to note that the patient's symptoms had disappeared She was free from symptoms at this time and subsequently, more so than she had been for many years

#### FURTHER X-RAY INTERPRETATION

DR HOLMES This film was taken as soon as the patient recovered from operation You can see a slight deformity due to possible thickening around the margin of the ulcer, but the crater has disappeared This film was taken a little later and shows practically no abnormality There is possibly a little diminished density here This is a film taken with the stomach filled The next slide shows films taken with special technique to bring out the gastric mucosa In this region you can see a definite abnormality of the mucosa in all the films taken

DR C M JONES Were those the last films taken, Dr Holmes?

DR HOLMES Yes

#### FURTHER CLINICAL DISCUSSION

DR C M JONES The last films were taken two or three weeks after the second set of films

and in spite of the fact that the patient was absolutely symptom free it seemed wise to reconsider the whole situation At that time the subject was discussed again from the point of view that it was the prepyloric region with which we were dealing and that lesions shown by x-ray occasionally are difficult to feel at operation We finally decided that in spite of the fact that there had been improvement in symptoms and in spite of the fact that there was improvement in the x-ray picture, there was still at the end of five or six weeks persisting evidence of a diseased condition in the prepyloric area It was decided to operate again, this time with the decision to resect whether anything was palpable or not I felt at the time that it was one of the very few occasions when a medical man has the right to ask a surgeon to perform a certain operation in spite of anything that may or may not be found at exploration Certainly our experience in the past two or three years has finally accumulated to a point where we feel justified in saying that a lesion of the prepyloric region has to be operated on and resected This patient was operated on a second time and resection was done

DR DANIEL FISKE JONES They say that confession is good for the soul and I am glad to be here to make my own confession instead of having someone else do it This is also an opportunity to apologize to the x-ray department for doubting their word I should like to say also that in spite of the fact that I am confessing, I am going to confess that I will do it again when I find the same condition, and I am going to continue to doubt the x-ray department when I can demonstrate no pathologic lesion on surgical exploration, but I do apologize in this case.

This case was operated upon for the reason that Dr C M Jones has just expressed, that one operates upon certain lesions of the stomach because of the location of those lesions The doctor in charge and I decided that the patient ought to be operated upon We had the x-rays and as you see on the plates the lesion was a very definite one and apparently was a deep ulcer I am mentioning that because it has quite a bearing on what I am going to say We operated upon this patient I have felt a few stomachs and I think I should be able to feel certain things, but when you look at this x-ray picture and then go into the abdomen and find a stomach which is absolutely normal in appearance, which has a flexibility which is so slightly less than the normal stomach that you cannot say there is any lack of flexibility, when you cannot feel any ulcer at all, and when the only thing found is so slight that you say to your assistants, "There may be a bit of depression there," it is impossible for me to do a resection of such a stomach

I appreciate that the location of a lesion in

this region is a serious thing but I also appreciate that a subtotal resection of the stomach is a serious thing. It is impossible, I think, if I may answer Dr Jones, for the medical man to say what should be done. He may say what ought to be done, but certainly the surgeon must say what he is going to do. I agree that all the information and all the help you can get from the medical man and roentgenologist are important and are worthwhile, but the surgeon is the man who is responsible and you cannot do resections of the stomach with no mortality. If you can all right go ahead and do as the medical man wants every time. I think he does not quite see the point of view of the surgeon. In some of these cases I think his opinion is of the greatest value. This patient had symptoms but when we compared my findings with the x ray findings I was quite unwilling to take the picture which they showed me and pay no attention to what I found with my fingers and with my eyes. I therefore closed the abdomen deliberately and intentionally telling the physician at the time that if our x ray findings did not change or did not improve, or did not make us feel that everything was all right, then the patient could be operated upon again. If you operate and do a resection and you find that there is nothing and the patient dies, you can not do anything. If on the other hand you close the abdomen and then find afterwards that it is necessary to operate, you can operate! That is one advantage. It is unpleasant for the patient I agree, but I think that you must take the reasonable point of view and not do an operation unless you can convince yourself that such a serious operation should be done, and I could not convince myself on the evidence found. I expect to do the same thing again some time if I live long enough and I shall do it without any hesitation, as much as I dislike to operate a second time upon a patient. There are many situations in surgery just like this and if you take the easy way and operate you will be a sad man, if you have any feeling at all because you are sure to lose a patient some time when you should not have done anything. This patient was disappointed. She was not half so disappointed or half so uncomfortable as I was, but still I had not killed her and I left her in the hands of a man who would do a much better operation than I did. He did do it and she is alive and well for which I am thankful.

Dr. LELAND S MCKITTRICK Dr. Jones was not here when the problem came up again. The situation was accentuated by a matter that was not mentioned. Her mental state was such that a decision for or against operation had to be made at the particular time at which we did operate. She had become so upset by uncertainty that she had to know one way or the other.

I have learned a great deal from it and I have set down some suggestions which I would follow in another similar situation. It seems to me in thinking it over, that probably one has to evaluate the risk of resection with the risk of delayed operation. Our experience has certainly been that prepyloric lesions are malignant until you prove them otherwise, and this experience would seem to show that in order to prove them otherwise at operation one must remove the pyloric end of the stomach. You can not do that with all patients because of the risk of a partial gastrectomy. If in another case I were doubtful, I should begin medical treatment at once and follow the patient carefully. If there was not complete disappearance of the lesion in six weeks to two months, I should advise operation. If I operated, I should then feel obliged to treat it as cancer and do a resection.

Dr. GEORGE W HOLMES First, I want to apologize to Dr. Jones. I should have been present at the operation. I think if I had been, I could have convinced him that there was something there, even if he could not feel it. I see his point very well. Here was a very definite lesion by x ray which did not appear at operation. He had every reason to doubt the report. If I had been present at the operation I could have assured him that the report was correct.

Such a lesion as has been described we believe is a cancer until it is proved otherwise. This case is one of a considerable series of such cases as has already been pointed out. This case also shows another important finding, namely, that an ulcerating lesion although cancerous may show marked improvement under dietary treatment or rest in bed. Certainly the ulcer was healed at the time the second operation was done. One of the signs that have been used by radiologists in differentiating benign and malignant gastric ulcers is the improvement of the patient under medical treatment not only the symptomatic improvement but the appearance of the ulcer crater under medical treatment. If this case is properly interpreted that sign is of no further value.

#### PATHOLOGIC DIAGNOSES

Carcinoma in situ  
Acute gastritis.

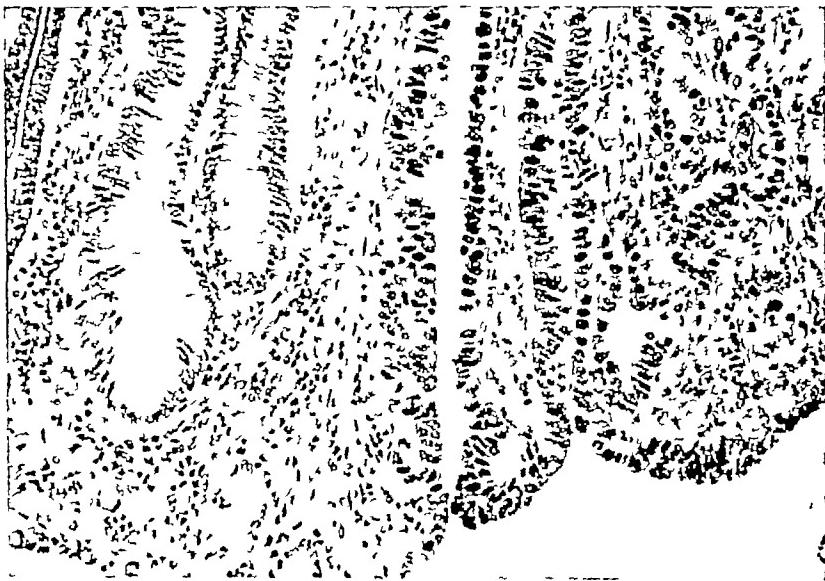
#### PATHOLOGIC DISCUSSION

Dr. TRACY B MALLORY I was present at the second operation and even after Dr. McKittrick delivered the prepyloric part of the stomach to me I was not able to feel anything abnormal. When we cut open the stomach it was evident that just behind the pyloric ring in the prepyloric region there was an area in the gastric mucosa that looked different from the rest. In this picture I think the artist has exaggerated the condition. The rugae came down and then

disappeared. There was not so sharp a difference in color between the areas. It was only after I looked two or three times that I really convinced myself that there was a lesion there. There were several minute erosions near the center which were covered with traces of fibrin, but nothing one could grossly call an ulcer. We felt that this was very much of a test case and therefore made particularly careful histologic studies. Dr. Bradley had serial sections of the entire area made. I will show you the pictures.

In cross sections of the area viewed under low power one can see normal glands on either side of the involved portion, in which the long parallel glands which would ordinarily run down to the muscularis mucosa have disappeared. At a slightly higher power one can localize the zone of abnormality a little more definitely. It is only the upper half of the mucosa that shows the change, whereas the deeper pyloric glands which resemble Brunner's glands are uninvolved.

The deeper layers of the mucosa are reached mitotic figures—which are of course normal enough in moderate numbers in the gastric mucosa—are increased four or fivefold over the usual numbers. Throughout the entire area of involvement, a little over a centimeter and a half, we have not been able to find a trace of invasion anywhere. It would be difficult to call it established cancer, many histologists would not, since they insist upon invasion as evidence of established malignancy. On the other hand a degree of atypicality such as this is well recognized as related to malignancy. Some people will call these lesions precancerous, many other pathologists feel that they are already cancer. Broders, of the Mayo Clinic, has invented a name to cover the particular situation. He calls it "cancer in situ." I think that is a very appropriate term for what we have here. We have every characteristic of carcinoma except invasion. To show that this is not an isolated instance I will show you slides from another case. Although



A section through the margin of the atypical area in the mucosa.

Normally the cells covering the surface and lining the outer half of each gland are typical mucous secreting goblet cells. Under the conditions referred to as "gastritis" this mucous secretion ceases and the cells tend to become somewhat hyperchromatic, but they still show normal arrangement and the nuclei are always basally oriented.

In the picture which is now on the screen (see illustration) you see a sudden sharp transition from perfectly normal mucous secreting cells to highly atypical ones which tend to be piled three and four deep, to show no orientation of the nuclei, no trace of mucous secretion, and to be intensely hyperchromatic. The glands show a tendency to multiple lateral outpocketings and to papillary infolding, whereas the normal glands in this area have little tendency to branch till

in this instance there is frank ulceration the mucosa on each side of the lesion shows the same type of abnormality as the preceding one. The findings can readily be duplicated from a series of gastric polyps some of which show the same suggestive evidence of beginning malignancy.

The overwhelming majority of these pre-pyloric lesions about which Dr. Holmes has spoken have been frank malignant cases. A couple have been obviously benign. These two are the only ones with any question of diagnosis. I have shown them to a great many pathologists and the average is three to one in favor of malignancy. A few stand out and say we cannot call it cancer until we get invasion. Whether at the moment we can call it cancer, I feel is academic. I do feel certain that it repre-

sents a stage on the way to cancer, the last stage before invasion and metastasis occur. Our only chance of curing cancer of the stomach is to operate on cases still in this stage.

### CASE 21112

#### PRESENTATION OF CASE

A forty six year old American farmer entered complaining of epigastric discomfort.

At the age of seventeen, twenty nine years before entry, he had an acute attack of burning pain across the upper abdomen. He was sick for about five days and spent the following month recuperating. No surgery was done. During the next ten years he felt fairly well except for an occasional sour burning in the pit of his stomach before noon. At the age of twenty eight, eighteen years before entry, he was seen by a well known gastro-enterologist who found no organic disease. Two years later his appendix was removed. At operation his gall bladder was found to be grossly normal. About twelve years before entry his epigastric discomfort and burning increased in severity often severe enough to wake him at night. Four years before entry he was seen by another well known gastro-enterologist who also found no evidence of organic disease. He was advised to reform his habits of irregular eating and sleeping. Two years before entry the epigastric burning became more severe and usually occurred between ten and eleven o'clock in the morning and eleven and twelve-thirty in the evening. These attacks were always relieved by soda or milk. He was seen again by the second physician. A gastro-intestinal series and a gastric analysis were negative. Approximately one year before admission, following three weeks of increased spasms of pain and rather strenuous exertion, he had a sudden attack of dizziness and weakness. He vomited occasionally but the vomitus never contained blood. The stools were black but did not contain any gross blood. He spent two weeks in a hospital where a gastro-intestinal series and barium enema were negative. The blood showed a red cell count of 2,800,000, with a hemoglobin of 55 per cent. Of three stool examinations one showed occult blood. When discharged his red blood cell count had risen to 4,000,000. During the past year his joint and epigastric cramps increased so that he was unable to work more than twelve days in two months. When he was seen three months before entry he had cramps all over his epigastrium, coming on in waves, lasting a few seconds and radiating to the chest. He also complained of easy fatigue for the past few weeks. Two months before entry he was put on a third stage gastric diet with tincture of belladonna which relieved about half of the symptoms. The

cramps became less severe. He led a very easy life but had to take milk and toast or powders and milk almost every hour. He improved somewhat during the next two weeks, at the end of which period he could have his meals every two and a half hours rather than every hour. On the day before admission there was a slight increase in burning and spasm. A guaiac test on the stools was positive.

The family history is non-contributory.

He had been married twenty two years, although he had not been living with his wife for some time. One daughter was living and well, another daughter, who was feeble-minded, died at the age of fourteen.

His past history is non-contributory except for severe intermittent migraine during the past twenty years.

Physical examination showed a well-developed and nourished man in no acute distress. The heart and lungs were negative. The blood pressure was 100/60. Abdominal examination was negative.

The temperature was 98°, the pulse 55. The respirations were 18.

Examination of the urine was negative. The blood showed a red cell count of 4,220,000 with a hemoglobin of 70 per cent. The white cell count was 5,500, 69 per cent polymorphonuclears. Only one out of seven stool examinations showed a positive guaiac test. The stools were soft and brownish gray in color.

A gastro-intestinal series showed a 3.5 centimeter filling defect just below the midportion of the stomach. This filling defect was smooth except on the distal portion of the lesser curvature where it presented a scalloped margin. The defect appeared to lie on the anterior aspect of the stomach but satisfactory lateral views could not be obtained. Within the defect there was a one centimeter ulceration. No pedicle could be demonstrated and the surrounding mucosa was normal. The pyloric valve and the first portion of the duodenum were negative.

On the sixth day operation was performed. He had an uneventful convalescence and was discharged three weeks after operation.

#### DIFFERENTIAL DIAGNOSIS

DR. GEORGE A. LELAND It would appear that this case is one of a man born in this country who at forty six years of age had had indigestion for twenty nine years. He had had repeated attacks of indigestion. These attacks had occurred specifically twenty nine eighteen sixteen, twelve four and two years ago and again several months, three months and two months before admission. These attacks seemed to point to some condition in the stomach or duodenum and were of the nature of or suggested some form of ulcer. His first attack lasted only five

days but required about a month for recovery

He had some trouble on and off for the next ten years, and then eighteen years before admission, or eleven years after the onset, he was gone over very carefully by a gastro-enterologist who found no organic disease

Two years later his appendix was removed and at that time his gall bladder was apparently observed by the surgeon and nothing made out grossly. That would be about sixteen years ago, before the time of the Graham test. The only laboratory test that might have been of avail at that time was the flat x-ray plate which, of course, was not very helpful. Nothing was mentioned about his stomach being palpated or inspected at that time. Perhaps that is just as well. The palpation of the stomach through an appendix-gall bladder incision is not necessarily productive of very startling results. Even the inspection of the stomach through a gall bladder incision is apt to lead one into error.

As these attacks went on they became not only more and more frequent in occurrence but also more and more severe. Epigastric burning relieved by soda or milk is distinctly an ulcer symptom. Two years before entry gastro-intestinal series and gastric analysis were performed and found to be negative. These points may be subject to some degree of debate. A well-taken gastro-intestinal series that was negative does not rule out a lesion in some obscure portion of the stomach. The negative gastric analysis makes one wonder whether that was an interpretation that the patient brought with him or whether it was checked up from its source. From looking that data over we have to take it for what it is worth and call it negative.

In the following year he had another symptom, bleeding. This was quite pronounced. The stools were black at that time. Another gastro-intestinal series was done and was negative. Although he never vomited blood, the black stools were undoubtedly due to blood, because his cell count became very low, less than 3,000,000, with a 55 per cent hemoglobin. Under care and rest in the hospital his blood came back to approximately normal.

"During the past year his joint and epigastric cramps increased so that he was unable to work more than twelve days in two months." We wonder if the "joint cramps" were thrown in to suggest hemorrhagic disease. There is nothing to suggest hemorrhagic disease in the subsequent history or examination. We do not know whether it was the joint cramps or the epigastric cramps that kept him from working. We are not informed but we will assume, since the rest of the history is gastro-intestinal, that it was the epigastric cramps.

"When he was seen three months before entry he had cramps all over his epigastrium,

coming on in waves, lasting a few seconds and radiating to the chest." That would indicate hyperperistalsis. The radiation to the chest would seem to me to indicate that the peristaltic waves were high up in the gastro-intestinal tract rather than low down. As one might suppose with this chronic story of indigestion, hemorrhage and epigastric pain, he began to decline in health and to show fatigue, which is mentioned here. He was treated, and apparently quite adequately, two months before entry by a third stage diet and belladonna which relieved his symptoms, presumably, and diminished his hyperacidity, at the same time quieting down the hyperperistalsis, so, of course, the cramps became less frequent and less severe. He carried on quite well with toast, powders, etc. When he was admitted he was having another exacerbation of pain and again showing blood in the stools.

In the family history, the feeble-minded daughter I do not think brings up any particular question.

The past history is negative.

The physical examination is negative except for the low blood pressure. The abdomen was negative, ruling out any masses.

His blood picture was indicative of secondary anemia. There was one guaiac positive in several stool examinations.

Up to this point in a man of forty-six with several attacks of epigastric pain, showing evidence of hyperacidity, hyperperistalsis and hemorrhage, one would have to think very strongly of ulcer. At the age when his symptoms started one would think perhaps of some form of lymphoma, but we would not expect a lymphoma to last twenty-nine years without showing other manifestations. He might have started in with gastritis and worked up to a lymphoma, but then that is only in the realms of possibility rather than probability. Apparently he had something elusive because the repeated gastro-intestinal examinations by presumably competent roentgenologists were negative. That brings up the question of a lesion in some obscure part of the stomach or some obscure lesion like polyp that does not cause a great deal of distress but is not always so easy to find. Of course the question of syphilis comes up, but we do not know much about syphilis. There is nothing mentioned about the serological test. There are other obscure conditions of the stomach, neurofibroma, fibromyoma, and fibroma, but I do not think we can say there is anything characteristic in the story about them. In a man of forty-six who has had a long story, with a negative gastro-intestinal examination, we think of something in the stomach, and although the story suggests ulcer we have to keep in mind the possibility and probability of its having changed

into malignancy. So up to this point we would favor ulcer with the probability of its having changed to cancer in the more recent months or years.

Coming now to the gastro-intestinal series we find a three and a half centimeter, about an inch and a half, defect which is smooth except for a scalloped margin. Just what significance that latter term has in the roentgenological nomenclature I do not know. Perhaps Dr Hampton will tell us. There was an ulcer there about a centimeter in diameter (that is about the size of a sixpence or a dime) and that size begins to come into the realm of malignant ulcers. The duodenum was negative. No mass was felt. We have no rectal corroboration of anything malignant. We are entirely adrift because of the absence of any mention of chemistry of the contents at this time. All we can say is that we have this scallop that may help us out. We have evidence of ulcer and if the scallop could tell us what kind of ulcer it is we might change our diagnosis from ulcer to cancer. In any event we would certainly advise operation. With a lesion on the anterior margin of the stomach we would expect to be able to remove a condition that had troubled him for twenty nine years which may or may not have become malignant. Just what sort of repair we would make after this resection would depend entirely upon the condition found. I would undertake the operation with the expectancy of finding ulcer with beginning malignant changes.

#### X RAY INTERPRETATION

DR. A. O. HAMPTON We were prepared for a very difficult examination when this patient came to the department because of his history and previous negative examinations. We were quite surprised to find a lesion. It was very obvious at the first glance that the stomach was abnormal, but the type of lesion was not nearly so obvious. The first swallow of barium was all that was necessary to do the entire examination. We learned no more after thirty minutes' effort than we knew at the first glance. There was a definite, round mass in the stomach with a definite localized area of ulceration in almost the exact center. The scalloped margin means a slightly wavy or nodular margin. I do not know what that means either. I just described it. I think a benign smooth tumor would not be scalloped. I do not know. Dr Chester Jones was present and he asked me what I thought the lesion was and I said that my first impression was leiomyoma or leiomyosarcoma because the only other lesion I had seen similar to it was a leiomyoma. A large round tumor with a small central ulcer is very rare in my experience. After thinking about the scalloped margin, his history and the recent negative examinations, I decided that the tumor must have grown rap-

idly, especially since it had been missed before, because it was quite easy to see at our examination.

#### CLINICAL DISCUSSION

DR. CHESTER M. JONES I have nothing to add except that his original symptoms on two occasions had been called nervous indigestion. He was an extremely highstrung individual who was most tense and just the type of person to have vague gastro-intestinal symptoms. It was obvious that he did have organic disease however and it appeared that it was of more recent origin than was brought out by the history that Dr Leland had. Before the x rays were taken I was not at all sure what he had, but it seemed to me a little unusual for uncomplicated peptic ulcer and because of the duration I had the same reaction, that malignancy should be considered. When I saw the x rays with Dr Hampton I felt sure in my own mind that it was leiomyoma, and it clinically fits in with the history of frequent repeated hemorrhages that one gets with leiomyoma. He had hemorrhages without any question. The thing that interested me was that this was a fairly good story for ulcer not a perfect story but a fairly good one in view of this lesion. I suppose it is due to the fact that he had an ulcerated lesion which produced symptoms in the same way as a benign peptic ulcer. I do not believe he had organic disease in the stomach for twelve or fifteen years. I believe it was of more recent origin, three or four years rather than more. The symptoms he had previously might well have been those of an unusually hard working intense individual.

DR. ARTHUR W. ALLEN At operation this mass felt like a sessile polyp and it was easily palpated through the stomach wall. There were no glands that could be felt anywhere and no evidence of any involvement of the liver. The question of diagnosis had been thoroughly discussed before operation agreeing with Dr Le land that radical resection should be carried out regardless of the character of the tumor.

The history of the patient was very interesting to me. On the basis of its duration it was inconceivable that this lesion could have been going on for the long period of time that this man had had symptoms. I am not sure whether anyone knows when the beginning of a lesion of this sort would be and what symptoms might come from it. I do not believe we know whether he could have had a small ulcer there that healed and developed again repeatedly so that perhaps this may have been the ultimate outcome of a chronic irritation.

The preliminary diagnosis which we made was leiomyosarcoma based on repeated hemorrhages and the x ray appearance, because we had had one other similar case in which that diagnosis was proved pathologically. It looked

somewhat like this with the exception that the irregularity and the ulcerating area were not present.

To clear up one question which Dr Leland raised as to the joint situation, I am sure we do not know what caused his shoulder pain. It was a transient affair, with negative x-ray findings, no limitation of motion and no localized tenderness in the region of the joint or bursa. At the same time he would have this pain in his left shoulder running down the arm, he had more or less pain in his chest and occasionally headaches. That he was a hypersensitive individual from a nervous standpoint there could be no doubt. The fact that he felt so well at the time of discharge from the hospital and insisted that he had not been so well for a great many years does not mean that all of his symptoms, gastric and otherwise, will remain relieved, but we hope he is rid of this particular lesion.

#### CLINICAL DIAGNOSIS

Leiomyosarcoma of the stomach

#### DR GEORGE A. LELAND'S DIAGNOSIS

Ulcer of the stomach with probable early malignant change

#### PATHOLOGIC DIAGNOSIS

Spindle cell sarcoma of the stomach, probably neurogenic fibrosarcoma.

#### PATHOLOGIC DISCUSSION

DR TRACY B MALLORY The portion of stomach which was resected I have here and will pass around. There is a small localized tumor with a rather broad base projecting from the mucosal surface and showing a shallow ulcer near the center. The tumor extends through to the serosa and was readily felt from the outside. Its total diameter is under three centimeters. The gross appearance is typical of a myoma or fibroma of the stomach, that is, a tumor arising in the deeper layers of the stomach wall rather than in the mucosa. Most such tumors that have been reported (about 400 are on record) in the literature have been classified as myomas of varying degrees of malignancy. There have been, however, a limited number of fibromas, some of them very definitely of perineurial origin. Many of the authors content themselves with the diagnosis of spindle cell sarcoma, undoubtedly an indication that the distinction between myomatous and fibromatous tumors may be very difficult. When the tumor begins to grow rapidly and does not differentiate completely I think it becomes completely im-

possible in many instances. In this case the tumor is growing fairly rapidly, with numerous mitotic figures. It is not well differentiated, and we have had considerable difference of opinion in the laboratory as to how to classify it. Other pathologists have also disagreed. My personal impression is that it is a perineurial fibrosarcoma. I can show identical histologic pictures from acoustic neuromas for instance. The most striking feature of the tumor is rather long spindle cells with marked palisading of the nuclei, which is quite characteristic of the neurogenic type of fibrosarcoma, though it may occur in myomatous tumors.

The great majority of spindle cell tumors that have been reported have had a story similar to this. They have had vague ulcer symptoms, sometimes fairly typical, more often a little atypical. They have repeated gastric hemorrhages and usually it is a very long time before anyone succeeds in demonstrating them by x-ray. Any case of gastric hemorrhage in which a lesion cannot be demonstrated by x-ray is certainly open to suspicion as leiomyosarcoma of the stomach.

DR ALLEN What are the probabilities of distant metastases?

DR MALLORY Undoubtedly the prognosis is distinctly better than that of carcinoma of that size. I do not think we can give a completely good prognosis however, though I should think his chances were better than fifty-fifty, which is far more than you can say for cancer.

DR ALLEN In your opinion, is his past history in any way related to the tumor from the standpoint of actual pathology?

DR MALLORY I think it is almost impossible to say. The tumor seems to be growing fairly fast. I could not distinguish any core of older slowly growing tumor. On the whole the histologic appearances suggest that it is a rather fresh lesion. On the other hand the story of almost all these cases is very similar and runs back years and years.

DR HOLMES Do you think there was tumor there two years ago? Could you be reasonably certain of that?

DR MALLORY I do not think one could be certain. It is possible.

DR BENJAMIN WOOD I think the patient deserves a certain amount of credit because in spite of being told during the past five years that he had no organic disease he kept a very careful record of his symptoms. On his own initiative he had been doing guaiac on the stools he passed for several weeks previous to the final hemorrhages and it was he who found the blood in his stools before he came in.

# The New England Journal of Medicine

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## THE BOSTON HEALTH LEAGUE

It is not uncommon to find that much of the most valuable work accomplished in any line of endeavor is done unostentatiously with no faint suggestion of the trumpet's clarion call or the brave music of even a distant drum. The chief drawback to such inconspicuous service is that it has no sentimental appeal to open the purse strings of the community.

The very nature of the Boston Health League's organization, composed as it is of thirty four agencies interested in health work in Boston, with representation from the Suffolk and Norfolk District Medical Societies and the Massachusetts Dental Society, and its activities, consisting of coordinating and advising in the work of these agencies put it among those that work for the most part unseen.

A glance at the League's report for 1934, however, will reveal substantial evidence as to the value of its work and the scope of its activities.

The vexing question of domiciliary medical care for the City's indigent was definitely presented to the League for its advice, and it was the opinion of the Committee on Domiciliary Medical Care that the City should consider the question of assuming this responsibility. All parties concerned could not be immediately satisfied, but a temporary solution was effected.

The Executive Committee of the League in April took upon itself the responsibility of recommending to the Mayor the adoption of the recommendations of the Mayor's committee to survey the Boston Health Department. In substance the Committee recommended

(1) That a permanent reorganization of the Health Department along modern lines as proposed by the Survey Committee should be undertaken.

(2) That much money could be saved by so doing without serious impairment of service.

(3) That any budgetary curtailment which may be decided upon for the Health Department should be based upon principles of effective public health administration.

(4) That a strong Advisory Council for the Health Department is essential.

The Educational Committee on Cancer gave nineteen lectures during the year and distributed literature, the Committees on Needs of Ward 9 held a Food Exhibit for two weeks in December in the Whittier Street Health Unit, at the request of the Executive Committee the Suffolk, Norfolk and Middlesex South District Medical Societies sent to their members reprints of the article published in *The New England Journal of Medicine* regarding the State Pneumonia Service.

The Committee on Social Hygiene sponsored a one day Institute for nurses on Syphilis and Gonorrhea, in co-operation with The Massachusetts Society of Social Hygiene and The Massachusetts League of Nursing Education. The Committee has continued sponsoring the Staff Council in Syphilis and Gonorrhea in co-operation with the Hospital Social Workers' Section of the Council of Social Agencies.

The Committee on Summer Camps again issued a pamphlet of suggestions for camp directors, and during the summer sent a score card to each camp requesting its return to the Health League Office in order that each organization might see how nearly it was complying with these standards.

A comparative study was undertaken on infant mortality in Charlestown and the West End in 1933 jointly by the Boston Council of Social Agencies, the Harvard School of Public Health, the Boston City Health Department and the Boston Health League to determine if possible, causes for the high infant mor-

tality in Charlestown and the low mortality in the West End. The results pointed toward a need for the strengthening of medical care in Charlestown.

The Health League was asked to interpret the Health Survey of Boston which was included in the Unemployment Census of Massachusetts and indicated that there is more sickness and more use of free care in areas where unemployment is highest.

Rates for new cases and deaths from pulmonary tuberculosis, and infant mortality, have continued to be computed by Census Tracts and are on file in the office. The League has also furnished stenographic service and done other preliminary work necessary for the organization of the new Hospital Council.

There is nothing spectacular in these activities, certainly, but their value and the need for their continuance are apparent.

#### DR WALTER R BETT

DR Bett has recently been appointed librarian to the Medical School at Columbia University. Of British parentage, he received his medical training at St Bartholomew's Hospital in London and at the London University Medical School. For many years he has been interested in medical history and was one of the instigators of the Osler Club of London, a group of young physicians who have kept the memory of Osler green. None of these young men ever knew Osler and yet they have succeeded in keeping alive a very active club, the principal event, each year, being the celebration of Osler's birthday by an appropriate address. The club, moreover, has collected many items about Osler, including a great many editions of his books and other material.

Among Dr Bett's publications is an interesting paper on "Koplik's Spots", in the *British Journal of Children's Diseases* for April, 1931, one of a series of pediatric eponyms to be found in recent numbers of the same Journal. He also edited and contributed to "A Short History of Some Common Diseases", published in Oxford, 1934. Dr Bett has served as secretary of the Section of the History of Medicine, Royal Society of Medicine, London, and, at the recent centenary meeting of the British Medical Association, he was secretary of the Historical Section. His brilliant mind and delightful sense of humor are well remembered by those who have attended the meetings of the Osler Club in London. It is a pleasure to welcome him to this country, for he will add much to the subject of medical history.

## The Massachusetts Medical Society

### ARRANGEMENTS FOR THE ANNUAL MEETING

THE commercial exhibits at the Annual Meeting in June give every promise of providing an exceedingly interesting and instructive display. The Information and Registration Booths, and the Scientific and Commercial Exhibits together are to occupy the large Ballroom of the Hotel Statler. The concentration of these important units of the meeting in one room should work to the advantage and convenience of the attending physicians and the exhibitors.

The importance to the medical profession of the manufacturers and distributors of drugs, biological products and apparatus is recognized, and in these days of rapid scientific progress is increasing constantly. The accomplishments of many researches carried on in medical schools and hospital laboratories become available for practical application only through the facilities of commercial houses. Many real contributions have been made by workers in laboratories owned and operated by business organizations.

The Commercial Exhibition is not simply a group of booths hired by drug houses for the purpose of selling their products. It is a carefully selected presentation of ethical and acceptable materials for the scrutiny of the medical profession. Its immediate function is to show and not to sell. Your Committee of Arrangements would commend it to your attention in the hope that you will visit its displays and demonstrations which the cooperation of science and commerce has made available for everyday use in the practice of medicine.

### SUB-COMMITTEES OF THE COMMITTEE ON PUBLIC RELATIONS

IN order to bring attention to the important problems before the medical profession, the Committee on Public Relations of the Massachusetts Medical Society has formed several sub-committees which will proceed to study certain phases of economic and ethical questions. In order to secure facts on which to proceed, these several committees will need the coöperation of individual members of the Society who may have encountered perplexities which need adjustment.

Attention is called to a letter (*The Problems of General Hospitalization*) from the sub-committee to study the general hospitalization problems, which appears on page 493 of this issue. Many members of the Society have had some

experience in hospital management, or contact from the outside with these institutions, which may suggest adjustments from several angles. As indicated in the letter, there are matters which will appeal to many, and all who wish to participate in this study should place their ideas before this committee at an early date.

The report of the committee is awaited with interest.

### THE MAIMONIDES MEETING

THE Boston Medical History Club will commemorate the eight hundredth anniversary of the birth of Moses Maimonides at the Boston Medical Library March 18 1935 at 8 15 P.M.

The story of the life of this eminent Jewish physician and philosopher is of great interest and the address to be delivered by Professor H. A. Wolffson warrants a large attendance. The announcement appears on page 499 of this issue.

### THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

CAREY, HELEN UPDEGRAFF Ph.D University of Michigan 1924 Associate in Biochemistry, University of Iowa 1928-1929 Special Research Chemist, New England Deaconess Hospital 1929-1932 Suddenly and unexpectedly died October 15, 1932

HUNT, HAZEL M. A B Director of Chemical Laboratory, New England Deaconess Hospital, was associated with Mrs. Carey in the preparation of the article entitled "The Chemical Nature of Cataract in the Diabetic." Page 463 Address 81 Bay State Road Boston, Mass

BENEDICT, EDWARD B A B M D Harvard University Medical School 1923 Assistant in Surgery, Harvard Medical School and Massachusetts General Hospital. His subject is "Chronic Gastritis. A Clinical Discussion Based on Gastroscopic Examination" Page 468 Address Massachusetts General Hospital, Boston, Mass.

BEATTIE, BARBARA. A B, M.D Cornell University Medical College 1924 Member of the New Hampshire State Board of Health. Her subject is "Some Experiences in the Treatment of Young Diabetics from the Point of View of the General Practitioner" Page 473 Address Littleton, New Hampshire

### The Massachusetts Medical Society

#### SECTION OF OBSTETRICS AND GYNECOLOGY\*

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Fall River Mass.

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Boston Mass.

#### SHOULD A PATIENT WITH INTERMITTENT ATTACKS SYMPTOMATIC OF APPENDICITIS BE OPERATED UPON WHILE PREGNANT?

This question cannot be answered without some qualification.

It is generally agreed that in a genuine attack of acute appendicitis during any stage of pregnancy regardless of whether other attacks have preceded or this is the initial one, immediate appendectomy is the treatment of choice. A genuine attack of appendicitis must meet the diagnostic criteria of localized tenderness and abdominal pain over the region of the appendix, temperature leucocytosis, nausea and vomiting, etc.

On the other hand, if the patient has a history of intermittent attacks simulating appendicitis or simply has a pain in the right side which to the patient may be symptomatic of appendicitis, an operation under these circumstances during pregnancy cannot be justified. The ideal treatment, of course, in a patient with definite intermittent attacks symptomatic of appendicitis is removal of the appendix before pregnancy occurs.

If a patient with previous intermittent attacks develops an attack truly symptomatic of appendicitis during pregnancy, there is no way by which the physician can be assured that perforation and peritonitis may not take place. Wilson has shown that after perforation a mortality of fifty per cent occurs among pregnant women and that the danger to the mother advances in direct proportion to the stage of pregnancy. This is because the difficulty of diagnosis and of operative removal are increased in the latter months of pregnancy.

Obviously then palliative treatment of an attack of appendicitis is even less indicated in the pregnant than in the non pregnant woman.

In the attacks of appendicitis occurring early in pregnancy, appendectomy can be undertaken with little chance of interrupting the pregnancy if the uterus is carefully packed off, if no drain age is necessary, and if the patient is kept well morphinized during the early postoperative period.

A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

riod. Rupture of the appendix with the resulting local or general peritonitis usually results in abortion or premature labor.

In conclusion, the answer to the question is that a patient with intermittent attacks symptomatic of appendicitis should be operated upon immediately if she develops an acute attack during pregnancy.

## MASSACHUSETTS LEGISLATIVE NOTE

H 60 Bill (accompanying 59, recommendations of the Commissioner of Public Health) requiring the vaccination of children in private schools

Report next annual session Accepted in Senate (Final)

## MISCELLANY

### COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1934 AND SEVEN YEAR AVERAGE

MONTH ENDING MARCH 2, 1935

Diseases	Week ending Feb 9	Week ending Feb 16	Week ending Feb 23	Week ending March 2	Average cases reported for week corresponding to March 2 for past seven years	Week ending Feb 10	Week ending Feb 17	Week ending Feb 24	Week ending March 3
	1935				1934				
Amebiasis	—	—	1	—	—	—	—	—	—
Cerebrospinal Men	1	—	1	1	2	—	—	—	—
Chicken Pox	175	149	145	153	102	130	116	72	90
Conjunctivitis Inf	1	—	—	—	—	—	—	—	—
Diphtheria	6	1	3	5	13	8	3	2	3
Dysentery Bacillary	2	1	—	—	—	—	—	—	—
German Measles	19	20	35	67	28	—	1	5	1
Influenza	9	21	12	32	753	18	3	6	24
Measles	617	620	689	785	247	33	39	30	49
Mumps	35	68	59	31	94	126	162	54	122
Paratyphoid Fever	—	1	—	—	—	—	—	—	—
Pneumonia (Broncho)	37	51	36	44	49	36	31	31	29
Pneumonia (Lobar)	33	52	37	38	56	63	37	46	39
Scarlet Fever	49	65	53	67	80	58	50	44	53
Septic Sore Throat	3	3	3	4	3	1	—	—	—
Smallpox	—	—	—	—	1	—	—	—	—
Trachoma	—	—	4	2	—	—	—	—	1
Trichinosis	—	—	—	—	—	—	—	—	1
Tuberculosis (Pul)	34	21	14	30	27	20	24	11	41
Tuberculosis (O.F.)	1	1	2	2	3	—	—	4	4
Typhoid Fever	—	—	2	2	—	2	—	—	1
Undulant Fever	1	1	1	—	—	—	—	2	—
Whooping Cough	73	68	61	62	71	40	58	27	37
Gonorrhea	26	26	16	29	37	14	47	9	30
Syphilis	47	41	45	66	48	45	31	32	47

Remarks No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years

### DR. STRONG ADDRESSES THE FLORIDA PUBLIC HEALTH ASSOCIATION

Dr Richard P Strong, Professor of Tropical Medicine of Harvard University, was the guest speaker at the recent meeting of the Florida Public Health Association in Jacksonville. The subject of his address was "Some Health Problems Regarding Parasitic Diseases Transmitted by Insects."

### DR. PHANEUF GUEST SPEAKER IN PORTLAND, MAINE

Dr Louis E Phaneuf, Professor of Gynecology, Tufts College Medical School, addressed the Cumberland Medical Society, Portland, Maine, on the evening of February 28, 1935, his subject being "Cervical Cesarian Section—Indications, Technique and End results."

## AN ADDRESS BY DR. HORRAX

Dr Gilbert Horrax Director of the Division of Neurosurgery of the Lahey Clinic, Boston, Massachusetts, will talk on "Certain Neurosurgical Conditions Which Are Particularly Interesting to the Psychiatrist, on Tuesday March 19 1935 at 8 15 P.M., in the Reception Building of the State Hospital for Mental Diseases Howard, R. I.

## CORRESPONDENCE

THE PROBLEMS OF GENERAL HOSPITAL-  
IZATION

Editor *New England Journal of Medicine*,

The undersigned have been appointed as a sub-committee of the Committee on Public Relations to study the problems of General Hospitalization, the Abuses and Competition of Hospital Out Patient Departments and the Hospitalization of the Workmen Compensation Cases.

This sub-committee would appreciate having the members of the profession bring to our attention specific and typical instances of the abuse of the above types of hospital facilities. We particularly wish for information on the various ways of meeting the problem of hospitalization of the indigent outside of Metropolitan Boston with reference to the compensation received by the doctors. Constructive corrective ideas will be most welcome.

We suggest that your discussions be pertinent to the following problems

1. Hospital out patient departments
2. Pay day or night clinics
3. Consultation clinics for people of moderate means
4. Varying degrees to which cities and towns pay the hospitals and doctors for the care of (a) Indigent sickness (b) indigent accident (c) indigent contagious disease.
5. To what degree are the hospitals in your community following the recommendation of the Council of the Society that workmen's compensation cases be admitted only on a semi private or private basis with compensation for the attending doctor?

Please address your letter to the chairman of the sub-committee at 45 Bay State Road Boston.

J. HARPER BLISSELL, Chairman  
FRANCIS H. DUNBAR,  
CHARLES FROTHINGHAM  
WALTER A. LANE,  
THOMAS H. McCARTHY

## PYLEPHLEBITIS AND APPENDICITIS

Editor *New England Journal of Medicine*

The exceptionally fine and authoritative paper on "The Association of Pylephlebitis and Appendicitis" by Dr Arthur W. Allen and collaborators in your issue of January 31 1935 proved of great interest to me. As in the case of Dr Lund who discussed

the paper it brought up old times and an anecdote that I can relate seems of some historical interest.

The elder Dr Fitz published his rather epoch-making paper on the appendix, in 1896. Some time before that, I think probably about a year Dr Fitz made what I think was his sole visit to the City Hospital in the six years that I was there, on some errand of his own. I inveigled him into going on the ward and seeing a case that puzzled us. The patient was a girl of ten, entering at a late date in her illness, and we were not possessed of very much history. All we could see was enlargement of the liver accompanied by some jaundice. We had not suspected the right iliac quadrant nor even after Dr Fitz had made his diagnosis, did we find it more than unobtrusive.

Dr Fitz made almost no examination but did suggest a pylephlebitis with a focal appendicitis and such it proved to be. At autopsy a liver with multiple abscesses and an appendix with retroperitoneal suppuration. Dr Fitz was then Professor of Pathology and undoubtedly surmised his diagnosis from pathological rather than clinical experience. This impresses the fact that to become a good clinician one must live both in the wards and the postmortem room. It is too often forgotten that clinical means the patient, alive and dead and that the actual seeing at the autopsy counts for vastly more than merely reading or hearing a protocol.

Thus this case was confirmatory of Dr Allen's finding that this rare (1300) combination seems confined to cases of appendicitis that have been either overlooked or received only late operation. In the discussion Dr Homans also related a case with autopsy disclosing an unrecognized appendicitis. In his case the "small abscess" was retrocaecal. So in the one I have cited Is there any thing suggestive in this apropos of Dr Allen's finding of constant absence of thrombosis in the veins of the cecal region thus at the time of operation at least, little basis for embolism or extension in the portal system?

Without remembering what was confirmatory I have always carried the impression that, in my case the extension of infection to the liver was posteriorly via the subserous connective tissue. In Dr Allen's detailed case there was a large abscess in the left lobe and a "large" intrahepatic abscess walled off between the liver and the transverse colon. This it seems to me could scarcely be accounted for on the basis of a pylephlebitis. Certainly a large single abscess in the liver can be led up to through a connective tissue avenue. Thus in a very chronic duodenal ulcer observed, with a much thickened base resting on the spine there was a subphrenic abscess.

The connective tissue significantly called areolar and cellular cuts a large figure in the conduction of pus and of inflammatory infectious processes as in the lung rupture of an interlobular septum may under certain conditions produce a general subcu-

taneous emphysema. Thus in an old lady lying for a long period on her back with a wrong diagnosis of senile dementia, that same back was lined with pus from the pelvis to the neck.

In the cecal region before the days of operation and before Dr. Fitz organized our more or less vague conceptions, we were on the lookout for pus, but when it was pretty surely present, one couldn't get it operated on. Strange, because at that late date, conditions were simply those of a walled-off pus cavity requiring not an invasion of the abdominal cavity, but the incision of an abscess.

What antics pus in this region may cut up! A foul fecal discharge from the navel in a long standing case! I admitted a right iliac case surgically for operation. I had traced pus over the rectum. Professor — was the surgeon and the patient, with nothing observed, was about to be returned to the ward. I whispered to the interne "finger in the rectum". The bulging wall was found and then—trocar and cannula! The man recovered.

We had many right iliac inflammatory tumors in those days. I remember one as large as a cocoanut. I recall discussing the constituency of them with Dr. Fitz. A patient insisted upon going to work with one, the shape of a sausage, easily palpable. No harm came. Thus in those days we had practice in ferreting out some sequences in pathology not vouchsafed today. "Tempora mutantur et nos in illis" but, be it impressed, in the medical art there are no generations.

SAMUEL DELANO, M.D.

New Britain, Conn,  
February 13, 1935

#### THE REPORTING OF SYPHILIS

The Commonwealth of Massachusetts  
Department of Public Health  
State House, Boston

March 6, 1935

Editor, *New England Journal of Medicine*,

Since January 1, 1930, the Massachusetts Department of Public Health has distributed 244,095 grams of arsenicals (arsphenamine, neoarsphenamine and sulpharsphenamine) to physicians, clinics and institutions. During the last five years, 915 different physicians have received 43,534 grams, or 17.8 per cent of the total distributed.

Three hundred and forty one (37.3 per cent) of these 915 physicians have never reported syphilis during these five years. It is evident, furthermore, from the amount of arsenicals ordered and the number of cases reported, that many of the 574 who have reported syphilis have reported only a few of their cases.

Two years ago the Department began enclosing its regular report forms with each package of arsenical sent to a physician, in the hope that reporting might thus be encouraged. Nothing whatsoever has come of this procedure, as will be evident from the following figures:

Year	Physicians Receiving Arsenicals	Have Never Reported Syphilis
1932	288	35.5%
1933	342	38.0%
1934	418	34.8%
1930-1934 (inclusive)	915	37.3%

Arsenicals are distributed for the treatment of syphilis. The law requires that syphilis shall be reported. The Department not only has made its report forms as simple as possible to fill out, but also provides envelopes for their return and pays the postage. It is regrettable that so many of those physicians who depend upon an expensive service rendered by the Department cannot, in turn, render the simple service, at no expense to themselves, of reporting syphilis. It is more to be regretted that their continued failure to report their cases must lead eventually to the ruling that no physician who has failed to report his cases will be supplied with arsenicals. Many states supply arsenicals only to those physicians who, with each request for the drug, indicate, in great detail, to whom the drug ordered is to be given.

Yours truly,

HENRY D CHADWICK, M.D.,  
Commissioner of Public Health

#### OFFICIAL ACTIONS OF THE BOARD OF REGISTRATION IN MEDICINE

State House, Boston

THE SUSPENSION OF THE REGISTRATION OF DR. JULIUS LEVINE AND THE REVOCATION OF THAT OF DR. JOSEPH TESSIER

Editor, *New England Journal of Medicine*,

This is to inform you that at a meeting of the Board of Registration in Medicine, held February 28, 1935, it was voted to suspend for two months the registration of Dr. Julius Levine of 253 Norfolk Street, Dorchester, Massachusetts, for deceit in connection with automobile injury insurance claims.

At this same meeting, it was voted to revoke the registration of Dr. Joseph N. Tessier of 33 South Sixth Street, New Bedford, Massachusetts, for gross misconduct in the practice of his profession.

Yours very truly,

STEPHEN RUSHMORE, M.D., Secretary

#### ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,  
February 28, 1935

Managing Editor, *The New England Journal of Medicine*,

In addition to the articles enumerated in our letter of February 4 the following have been accepted:  
Merck & Co., Inc.

Tablets Cebione—Merck, 0.05 Gm

Parke, Davis &amp; Co

Capsules Silvol 6 grains

Kapsules Ortal Sodium with Amidopyrine

Pfanstiehl Chemical Co

Aminoacetic Acid—Pfanstiehl

United States Standard Products Co.

Bermuda Grass Pollen Extract — U.S.S.P Co

Box Elder Pollen Extract — U.S.S.P Co

Burweed Pollen Extract—U.S.S.P Co Careless

Weed Pollen Extract — U.S.S.P Co Cocklebur

Pollen Extract — U.S.S.P Co Corn Pollen Extract—U.S.S.P Co Cosmos

Pollen Extract — U.S.S.P Co Cottonwood

(Poplar) Pollen Extract — U.S.S.P Co Dandelion Pollen Extract—U.S.S.P Co Elm

Pollen Extract — U.S.S.P Co English

Plantain Pollen Extract—U.S.S.P Co Goldenrod

Pollen Extract—U.S.S.P Co Grasses Combined Pollen Extract — U.S.S.P Co

(Bermuda Grass June Grass Orchard Grass

Red Top Sweet Vernal Grass and Timothy

in equal parts) Johnson Grass Pollen Extract—U.S.S.P Co June Grass Pollen Extract—U.S.S.P Co Lambs Quarters Pollen

Extract — U.S.S.P Co Maple Pollen Extract—U.S.S.P Co Marsh Elder Pollen Extract—U.S.S.P Co Mugwort (Wormwood)

Pollen Extract—U.S.S.P Co Orchard Grass Pollen Extract—U.S.S.P Co Pigweed (Redroot) Pollen Extract—U.S.S.P Co Ragweed (Common) Pollen Extract — U.S.S.P Co Ragweed (False) Pollen Extract—U.S.S.P Co Ragweed (Giant) Pollen Extract—U.S.S.P Co Ragweed (Western) Pollen Extract—U.S.S.P Co Ragweed Combined Pollen Extract—U.S.S.P Co (Giant and Common Ragweed, in equal parts) Red Oak Pollen Extract—U.S.S.P Co Red Top Pollen Extract—U.S.S.P Co Russian Thistle Pollen Extract — U.S.S.P Co Rye Grass Pollen Extract—U.S.S.P Co Sweet Vernal Grass Pollen Extract—U.S.S.P Co Timothy Pollen Extract — U.S.S.P Co White Ash Pollen Extract — U.S.S.P Co White Oak Pollen Extract — U.S.S.P Co White Oak Pollen Extract—U.S.S.P Co

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N.N.R. (New and Nonofficial Remedies 1934, p 443)

Sharp &amp; Dohme

Ampules Sodium Cacodylate — Mulford 7½ grains, 5 cc.

Yours sincerely

PAUL NICHOLAS LEECH Secretary  
Council on Pharmacy and Chemistry

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THE HINTON TEST IN NEUROSYPHILIS\*

January 15, 1935

Editor New England Journal of Medicine,  
Instituted 1847. The New England Journal

of Medicine, March 29 1934, it was announced by the State Department of Public Health that the Wassermann Laboratory would henceforth perform the Hinton test instead of the Wassermann test on all specimens of blood submitted for the serological detection of syphilis. This decision was reached after comparative studies of various serological tests were made at the Wassermann Laboratory and the Boston Dispensary and was the culmination of Dr Hinton's serological investigations covering a period of several years.<sup>1</sup>

The Hinton reaction is based on the principle of precipitation in contradistinction to the Wassermann complement fixation methods. As a result of a comparison of the tests performed on thousands of bloods, it became apparent that the Hinton test was an exceedingly sensitive one and it was hailed as a distinct advance in the serodiagnosis of syphilis. The serological data on the blood sera of patients in the Boston Psychopathic Hospital obtained routinely during the past few years present sufficient evidence of the high degree of sensitivity of the Hinton test in the detection of syphilis.

In the course of Dr Hinton's investigations interest became centered upon the serological reactions in cases of neurosyphilis. Many observations seemed to indicate that a negative Hinton reaction on the blood ruled out the presence of neurosyphilis and conversely that neurosyphilitic cases invariably showed a positive blood Hinton reaction. This soon led to the conclusion that lumbar punctures could be eliminated and Hinton tests substituted in the serodiagnosis of neurosyphilitic patients. It is the purpose of this communication to discuss this aspect of the serological problem and to present briefly some observations recently made on patients in the Neurosyphilis Clinic, which serve to illustrate some of the vagaries of the Hinton test in neurosyphilis. These observations were derived from the serological data obtained during the past year and a half. From the standpoint of technique, therefore, the results represent the most recent refinements of the Hinton test and consequently would yield reliable data upon which conclusions may justifiably be drawn.

For many years it has been generally conceded that the status of the spinal fluid is the most accurate index of activity of the neurosyphilitic process. Moreover lumbar puncture has become an established procedure in the treatment of neurosyphilis and the results of spinal fluid examinations furnish the best criteria for the continuation or cessation of treatment. These tenets have been stressed repeatedly by Dr H. C. Solomon who has, in the course of twenty years accumulated considerable data on the value of lumbar puncture in neurosyphilis. This evidence indicates that the best therapeutic results are obtained by periodic checkups of the spinal fluid and that the underlying disease may be said to be arrested when a completely negative

mental principles in the treatment of neurosyphilis and must be adhered to in the application of the Hinton test.

There are two questions, then, that must be answered 1 Do cases of neurosyphilis always show a positive Hinton reaction on the blood? 2 Does the Hinton test become negative when the spinal fluid tests return to normal during the course of treatment? In order to throw some light on these questions, Berk and Hinton<sup>5</sup> made a comparative study of the spinal fluid examinations and the blood Hinton reactions in 787 cases in which there had been infection by syphilis, and concluded that a negative Hinton reaction on the blood "almost totally excludes the likelihood of there being laboratory evidence of neurosyphilis obtainable by lumbar puncture" It is to be noted that the Hinton test was modified so that it would not give a negative result when the spinal fluid was abnormal

From the very beginning of Hinton's investigations on the precipitation reactions of blood sera, comparative serological data have been accumulated on all cases in the Psychopathic Hospital Clinic, and sufficient experience with the results of the Hinton test has been obtained. However our observations have not justified the elimination of lumbar puncture in the management of neurosyphilis, and the usual custom of making routine spinal fluid examinations has continued A brief summary of illustrative findings follows

1 In a group of untreated cases of neurosyphilis with strongly positive spinal fluids there were found eleven patients with frank clinical signs of paresis who showed consistently negative Hinton reactions on the blood This number is not large, but it indicates definitely that lumbar puncture is indispensable in the serologic diagnosis of neurosyphilis and that a negative Hinton test does not rule out the presence of syphilis of the nervous system The total number in this series is drawn from the routine admissions to the hospital during the one and one-half year period and may be estimated at three hundred neurosyphilitic cases

2 Among the treated cases there were seven patients who after considerable treatment showed negative Hinton reactions on the blood but still maintained positive spinal fluids of varying degrees of strength. This would indicate that even from the treatment standpoint the Hinton test is not a reliable criterion for the continuation or cessation of therapy in cases of neurosyphilis

3 Conversely in the group of treated cases there were five cases in which the Hinton tests on the blood were positive. These patients were previously treated and maintained negative spinal fluids over a period of years during which no treatment was given despite the finding of positive Hinton reactions on the blood It is possible that these cases represent instances of active syphilis But from the neurosyphilitic standpoint the persistence of a positive Hinton test is of no greater significance than other positive blood tests, such as the Wassermann,

which sometimes persist long after the spinal fluid is made negative by treatment. Whether or not these patients should be treated is a difficult question to decide But it is to be pointed out in a considerable experience with the serological reactions in cases of neurosyphilis that the blood reactions are of no significance in the prognosis and final result of treatment.

4 In the course of intensive treatment of neurosyphilitic cases carried out over a period of years, there were found thirty eight cases in which a negative spinal fluid was obtained and which still showed positive Hinton reactions on the blood All of these patients were arrested paretics with varying degrees of mental defect and were still being treated because of the general policy of maintaining the negative result. There are no indications of reversal of the blood Hinton reactions to normal, although there is sufficient evidence in these cases of arrest of the neurosyphilitic process

Finally, mention should be made of the patient who refuses lumbar puncture because he has been told that the Hinton test on his blood is negative and, therefore, believes that his spinal fluid must be negative also It is not an uncommon experience in our clinic to encounter such patients with frank clinical signs and symptoms of neurosyphilis

Very truly yours,

SAMUEL H. EPSTEIN, M.D.

74 Fenwood Road,  
Boston, Mass

#### REFERENCES

1. New Eng J Med. 210 711 1934
2. Hinton W A. Boston M. & S J. 196 993 1927
3. Hinton, W A. and Berk, A. J. Ment. Sc. 77 495 1931.
4. Hinton W A. J Lab & Clin. Med. 18 198 1932-33
5. Berk A. and Hinton, W A. Am. J Syph. & Neurol. 18 92 1934

#### RECENT DEATHS

MARTIN — FRANKLIN H. MARTIN, M.D., Director General of the American College of Surgeons, died in Phoenix, Arizona, March 7, 1935 Dr Martin was seventy-seven years old He suffered an attack of coronary thrombosis, and although he was reported in the newspaper to have been in previous good health, his friends had felt concern over his physical condition when he was in Boston at the time of the last meeting of the American College of Surgeons

Dr Martin was essentially an organizer, having founded the clinical Post-Graduate Medical School in 1882 with Dr G W F Coleman, and the *American Journal of Surgery, Gynecology and Obstetrics* This publication was donated to the American Surgical Association in 1932 together with the building and its contents located in Chicago

Dr Martin was active during the World War on the Advisory Commission of the Council of National Defense

DUANE—WILLIAM DUANE, M.D., formerly Professor-Emeritus of Bio-Physics at Harvard, died in Philadelphia, March 7, 1935

He was associated with Boston physicians in x ray research for several years and was consulted when technical matters required elucidation. When the Abrams propaganda was under way in Boston, his advice enabled doctors to refute the exaggerated claims of this cult.

**LAWRENCE—ROBERT MEANS LAWRENCE, M.D.** of 117 Bay State Road, Boston, died at his home March 7, 1935. He was born in Boston in 1847, the son of William R. and Susan (Dana) Lawrence, and the grandson of Amos Lawrence, the philanthropist.

After graduating from Harvard College he entered the Harvard Medical School and graduated in 1873. He joined the Massachusetts Medical Society in 1873 and resigned in 1912.

He was an athlete in early life with especial interest in football.

He was connected with the Boston Dispensary for ten years later serving as trustee, and was surgeon of the first regiment of Massachusetts Volunteers. His religious affiliations were with the Episcopal church.

Two daughters Mrs. Isabel B. deGersdorff of Bedford Hills, New York, and Miss Madeleine Lawrence of Boston survive him.

## The Massachusetts Medical Society

### SECOND ANNUAL POSTGRADUATE MEDICAL EXTENSION COURSE

The spring sessions of the 1934-35 schedule will be given in the various districts on the dates listed below:

#### Barnstable

- March 17 — Obstetrics and Gynecology (First Session)
- March 24 — Obstetrics and Gynecology (Second Session)
- March 31 — Obstetrics and Gynecology (Third Session)

#### Berkshire District

- April 4 — Obstetrics and Gynecology (Third Session—Gynecology)
- April 11 — Endocrinology (Second Session)
- April 18 — Endocrinology (Third Session)
- April 25 — The Common Neuroses and Their Treatment in Private Practice. The Psyche—Early Diagnosis.

May 2 — Dermatology and Syphilis

#### Bristol North (Attleboro Section)

- March 19 — Endocrinology (First Session)
- March 26 — Endocrinology (Second Session)
- April 2 — Endocrinology (Third Session)
- April 9 — Cardiovascular Disease (First Session)
- April 16 — Cardiovascular Disease (Second Session)
- April 23 — Cardiovascular Disease (Third Session)

#### Bristol North District (Taunton Section)

- March 20 — Cardiovascular Disease (Third Session)

- March 27 — Dermatology and Syphilis
- April 3 — Obstetrics and Gynecology (First Session)
- April 10 — Obstetrics and Gynecology (Second Session)
- April 17 — Obstetrics and Gynecology (Third Session)

#### Bristol South (Fall River Section)

- March 18 — Surgery (First Session)
- March 25 — Surgery (Second Session)
- April 1 — Surgery (Third Session)

#### Bristol South District (New Bedford Section)

- March 22 — Endocrinology (First Session)
- March 29 — Endocrinology (Second Session)
- April 5 — Endocrinology (Third Session)
- April 12 — Cardiovascular Disease (First Session)
- April 19 — Holiday—no session.
- April 26 — Cardiovascular Disease (Second Session)
- May 3 — Cardiovascular Disease (Third Session)
- May 10 — Obstetrics and Gynecology (First Session)
- May 17 — Obstetrics and Gynecology (Second Session)
- May 24 — Obstetrics and Gynecology (Third Session)
- May 31 — The Common Neuroses etc

#### Essex North District

- April 2 — Obstetrics and Gynecology (First Session)
- April 9 — Obstetrics and Gynecology (Second Session)
- April 16 — Obstetrics and Gynecology (Third Session)

#### Essex South District

- March 19 — Dermatology and Syphilis
- March 6 — Cardiovascular Disease (First Session)
- April 2 — Cardiovascular Disease (Second Session)
- April 9 — Cardiovascular Disease (Third Session)

#### Franklin District

- March 37 — Dermatology and Syphilis
- April 10 — Cardiovascular Disease (First Session)
- April 17 — Cardiovascular Disease (Second Session)
- April 24 — Cardiovascular Disease (Third Session)
- May 1 — Obstetrics and Gynecology (Third Session)

#### Hampden District (Springfield and Holyoke Sections)

- March 21 — Endocrinology (Second Session)
- March 28 — Endocrinology (Third Session)
- April 4 — The Common Neuroses etc.
- April 11 — Endocrinology (First Session)

#### Hampshire District

- April 1 — Surgery (First Session)
- April 24 — Surgery (Second Session)
- May 1 — Surgery (Third Session)
- May 8 — Cardiovascular Disease (First Session)
- May 15 — Cardiovascular Disease (Second Session)

**SOCIETY MEETINGS,  
CONGRESSES AND CONFERENCES**

**CALENDAR OF BOSTON DISTRICT FOR THE WEEK  
BEGINNING MONDAY, MARCH 18, 1935**

Monday, March 18—

\*8 15 P M Boston Medical History Club, Boston Medical Library and the Greater Boston Medical Association Boston Medical Library, 8 Fenway

Tuesday, March 19—

All-day session New England Ophthalmological Society See page 498

12 M South End Medical Club Headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston

1 30 P M Radio Program—WEEI "Bacillary Dysentery"

\*2 30-4 P M Ward visit Massachusetts Eye and Ear Infirmary

\*4-5 P M Seminar Pediatric Laboratory, Massachusetts General Hospital.

\*4 30 P M Radio Program—WBZ "Lumps in the Breast"

\*8 15 P M Robert Breck Brigham Hospital, Clinical Meeting 125 Parker Hill Avenue, Boston

Wednesday, March 20—

5 30 P M Tufts Medical Alumni Dinner (business meeting) Dinner at 6 30 P M University Club, Boston

8 P M New England Physical Therapy Society Evans Memorial Auditorium, 82 East Concord Street, Boston

\*8 15 P M Boston City Hospital Staff Clinical Meeting, Cheever Amphitheatre

Thursday, March 21—

\*12 M Clinico-Pathological Conference Massachusetts General Hospital

\*12 M Clinico-Pathological Conference Children's Hospital

\*3 30 P M Medical Clinic Dr Christian Peter Bent Brigham Hospital

\*4 30 P M Surgical Clinic Peter Bent Brigham Hospital

Friday, March 22—

5 P M Radio Program—WEEI "The X-Ray in Tuberculosis" "Home Care in Tuberculosis"

Saturday, March 23—

\*10-12 Medical Staff Rounds Dr Christian Peter Bent Brigham Hospital

Sunday, March 24—

4 P M Harvard University (Medical School Building D, Longwood Avenue Boston) Free lecture "Inheritance" Dr F C Irving

\*Open to the medical profession  
Open to Fellows of the Massachusetts Medical Society

March 15—Boston University School of Medicine Surgical Clinic at the Boston City Hospital See page 499

March 15—The New England Roentgen Ray Society will meet at the Boston Art Club at 8 P M.

March 18—Boston Medical History Club Boston Medical Library, and the Greater Boston Medical Association See page 499

March 19—Robert Breck Brigham Hospital, Clinical Meeting See page 499

March 19—Lawrence Cancer Clinic See page 498

March 19—The South End Medical Club will meet at the headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, at 12 noon

March 19—New England Ophthalmological Society See page 498

**MASSACHUSETTS DIETETIC ASSOCIATION**

March 19—Tuesday, 2 P M Field Trip Visit Storehouse First National Stores

April 9—Tuesday, 8 P M "Small Hospital Problems," Miss Margaret Copeland, Superintendent Free Hospital for Women.

March 20—New England Physical Therapy Society will meet at the Evans Memorial Auditorium, 82 East Concord Street, Boston, at 8 P M

March 20—Boston City Hospital Staff Clinical Meeting will be held in the Cheever Amphitheatre at 8 15 P M

March 20—Tufts Medical Alumni Dinner See page 499

March 21—Clinic at the Peter Bent Brigham Hospital See page 498

March 25—New England Heart Association See page 499

March 26—Harvard Medical Society See page 499

April 12—William Harvey Society Dr Jonathan C Meakins, President American College of Physicians, will speak on Cardiology During the Past Three Hundred Years—The Legacy of William Harvey'

April 23—The Massachusetts Society for Social Hygiene will meet at the University Club, Boston For information address Dr E Granville Crabtree, 99 Commonwealth Avenue, Boston

April 26, 26, and 27—The American Association on Mental Deficiency will meet at the Palmer House, Chicago For information address the Secretary, Dr Groves B Smith, Godfrey, Illinois

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr E R Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa

June, 1935—Medical Library Association will meet in Rochester, N Y For details, address the Secretary Miss Frances N A Whitman, Librarian Harvard University Schools of Medicine and Public Health, Boston, Mass

Jure 11—American Heart Association See page 499

June 12 and 13—Academy of Physical Medicine See page 499

June 17 to 21—Convention of the Catholic Hospital Association will be held at Creighton University Omaha Nebraska For information address the Most Reverend Joseph Francis Rummel, D D, Bishop of Omaha

June 27 29 Inc—British National Association for the Prevention of Tuberculosis will be held at Southport, England Persons desiring further information should write to Miss F Stickland, Secretary of the Association at Tavistock House North, Tavistock Square, London, W C I, England

July 22 27—Seventh International Congress on Industrial Accidents and Diseases, Brussels, Belgium The American Committee of the Congress is under the chairmanship of Dr Fred H Albee New York, for the Section on Accidents, and that of Dr Emery R Hayhurst, Columbus, Ohio, for Industrial Diseases The American delegation to the Congress will sail from New York on July 8 and visit London, Amsterdam, The Hague and Paris, and, optionally, Budapest Physicians interested in the Congress or in the medical tour in conjunction with it, may address the Secretary, Dr Richard Kovacs, 1100 Park Avenue, New York City

**DISTRICT MEDICAL SOCIETIES**

**ESSEX NORTH DISTRICT MEDICAL SOCIETY**

The Annual Meeting will be held in May Time, place and subject to be announced

E S BAGNALL, M D, Secretary

**FRANKLIN DISTRICT MEDICAL SOCIETY**

Meeting will be held on the second Tuesday of May at the Weldon Hotel, Greenfield, Mass

CHARLES MOLINE, M D, Secretary

**MIDDLESEX EAST DISTRICT MEDICAL SOCIETY**

May 8—Winchester

K. L MACLACHLAN, M D, Secretary  
1 Bellevue Street, Melrose

**NORFOLK DISTRICT MEDICAL SOCIETY**

March 26—Fernald School for Feeble-Minded, Waverley Details to be announced

May—Annual Meeting Date, time and place to be announced

**PLYMOUTH DISTRICT MEDICAL SOCIETY**

March 21—Meeting will be held at the Plymouth County Hospital, South Hanson, at 11 A M

April—Lakeville Sanatorium

**SUFFOLK DISTRICT MEDICAL SOCIETY**

March 27—Clinical Meeting at the Boston Lying-In Hospital

April 24—Clinical Meeting at the Children's Hospital The medical profession is cordially invited to attend these meetings

ROBERT L DeNORMANDIE M D, President  
GEORGE F REYNOLDS, M D, Secretary

**WORCESTER DISTRICT MEDICAL SOCIETY**

April 10—Wednesday evening Worcester Hahnemann Hospital, Worcester, Mass 6 30 P M Dinner 7 30 P M Scientific program and business session Announcement of subjects and speakers to be presented at a later date Dinner complimentary by the Hospital

May 8—Wednesday afternoon and evening Annual Meeting of the Worcester District Medical Society The time and place of this meeting will be announced later

ERWIN C MILLER, M D, Secretary

27 Elm Street, Worcester

# The New England Journal of Medicine

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NUMBER 12

## NEW ENGLAND SURGICAL SOCIETY

### INDICATIONS FOR AND RESULTS OF TOTAL CYSTECTOMY FOR CANCER OF THE BLADDER\*

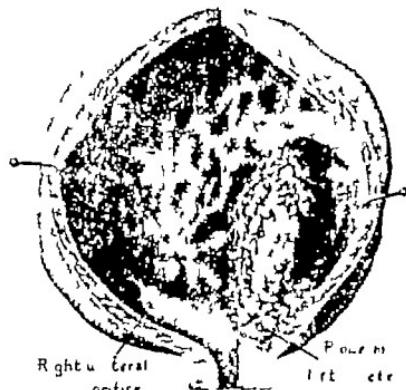
BY WILLIAM C. QUINBY, M.D.†

THAT the present results of all forms of treatment of cancer of the bladder are bad must be acknowledged by all surgeons whose duty it is to deal with this very serious disease. The reasons for this fact may frequently lie in the delay in diagnosis attendant on any ailment of insidious onset as is thus. Other and more important reasons must be found however in the inability of the various forms of treatment to eradicate the growth and prevent its recurrence. The degree of malignancy also plays a part in some instances in contributing to this gloomy prognosis. As compared with other malignant tumors bladder carcinomata do not tend to become metastatic at a very early period in their growth. From this point of view therefore, they should be more often cured than is evident by the case.

The tendency for cancer of the bladder to be situated in the lower segment of this organ is well shown in the report of the Registry for Carcinoma of the Bladder recently published, which finds 76.6 per cent of the tumors so situated. Thus to quote the report "From the standpoint of surgical treatment only 23.4 per cent of the above tumors were readily accessible for complete excision without interfering with the ureter or the urethra." Thus carries as its corollary the fact that even if the neoplasm be successfully obliterated the function of the bladder and kidney will often be seriously crippled thereafter. And this will be inevitable whether the form of treatment be by the use of radium in one or another form or if it be by surgical excision.

The operative removal of the urinary bladder in its entirety carries with it the perplexities of the diversion of the urine and in my opinion in many instances it is this problem which has led the surgeon to choose methods of treatment of bladder cancer which are acknowledged to be less thorough than those which he willingly brings to bear on malignancy situated in other

regions of the body. To remove the bladder, the site of a malignant growth of some extent, is not a very formidable operative procedure. Certainly all will admit that by total cystectomy a better chance of removing the malignancy will be had especially if it is at all extensive, than can be hoped to follow merely local excision. But if the subsequent life of the patient is to be



Bladder showing typical carcinoma in its low segment. Cystectomy eighteen months after first symptoms and twelve months after first gross hematuria. Death of recurrent carcinoma of lungs and bones two years after cystectomy.

one of discomfort and the outlook for renal function only a steady decline, such an operation will be thought by many to be hard to justify.

After excision of the urinary bladder there are three methods of disposal of the urine, either it may be delivered directly onto either loin by pyelostomy or nephrostomy or each ureter may be brought out to the surface of the body either in the high inguinal or lateral abdominal position, or each ureter may be implanted into the bowel. The difficulties following either of the first two methods are early infection of the kidney, besides the need for

From the Urological Clinic of the Peter Bent Brigham Hospital Boston, Mass.  
Read at the Annual Meeting of the New England Surgical Society, Burlington, Vermont, September 8, 1934.

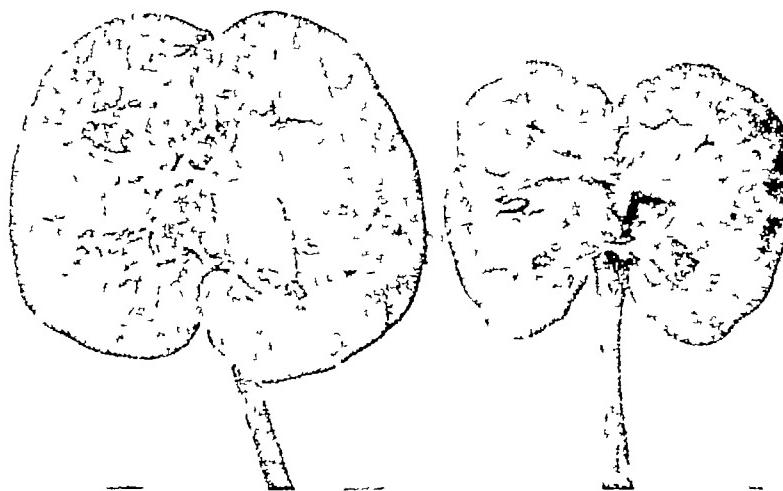
\*Quinby, William C.—Clinical Professor of Gastro-Urinary Surgery Harvard University Medical School. For record addressee [author see "This Week's Issue," page 52.]

some sort of apparatus to collect the urine and the attendant discomfort and complicated care of this. The dangers of the third method, that of uretero-intestinal anastomosis, are the risk of immediate peritonitis if the union between ureter and bowel is not well made and later of progressive infection of the kidney also due to improper anastomosis. After the first two types of disposal of the urine the patient leads but an uncomfortable existence, as a rule, constantly surrounded by the odor of decomposed urine. After the third type his existence is entirely comfortable, the rectum acting splendidly as a urinary receptacle.

In order to determine the results of uretero-intestinal anastomosis quite independent of the factor of malignancy one turns to its end results in a condition in which this procedure is now extensively used, namely, exstrophy of

In view of these facts it is clear that if the element of malignancy per se in patients afflicted with cancer of the bladder does not add other insuperable risks, the anastomosis itself can be expected to be followed by success. There certainly seems no doubt that in selected cases, especially those in which eradication of the cancer makes necessary severe crippling of bladder function, total excision of this organ and uretero-intestinal anastomosis should be carried out.

Thus far at the Peter Bent Brigham Hospital, cases for total cystectomy have been chosen on the following criteria: (1) The growth must be in the lower bladder segment so that its removal would involve the sphincter or ureteral orifice or both, (2) there must be no demonstrable metastases to the regional lymph nodes or to those of the aortic area, (3) on one



The kidneys eight years after implantation of the ureters into the bowel. The left kidney shows evidence of previous pyelonephritis with shrinking. The right kidney appears nearly normal. Death from recurrent carcinoma in pelvis and rectum.

the bladder. For this to-day it may be said to be the standard form of treatment. A communication by Walters of the Mayo Clinic deals with the follow-up information in seventy-six patients. He reports three hospital deaths subsequent to operation. Twenty-seven had lived five years and thirteen ten years after operation. In three the result of operation was unsatisfactory. "In 50 per cent of the cases there was no evidence of renal infection. In 20 per cent there were short periods of mild renal infection, the interval between such periods in most cases was many months, sometimes years. Study of these patients by pyelography leads to the belief that the renal function is normal and that there is no dilatation of the pelvis, calices or ureters in cases in which the uretero-sigmoidal anastomosis is accurately carried out." This report gives emphasis to the similar opinion of other surgeons who have this type of patient under their care.

side at least the kidney excretion and its pelvis and ureter must be normal, and finally (4) the microscope must show actively growing carcinoma. Patients showing cachexia or otherwise poor operative risks have been excluded. In a search for metastases x-rays of lungs and bones also are made. After cystoscopy,—possibly a cystogram as well—pyelography, and biopsy, the first operation is undertaken, frankly exploratory. At this the peritoneum is opened, the intestines entirely lifted from the pelvis, and careful examination made of the lymph node bearing areas on each internal iliac artery and at the aortic bifurcation in the presacral area. If any suspicious areas are found either on inspection or palpation, the parietal peritoneum is incised and the area removed for biopsy. In seven cases evidence of extravesical involvement was thus obtained of such an extent as to make cystectomy not justified. In the absence of such evidence one ureter is transplanted into the sigmoid. Re-

covery from this operation having taken place with establishment of renal activity into the bowel, at a second operation the other ureter is similarly transplanted and the bladder excised. I have not yet felt it wise to transplant both ureters at a single operation. Together with the bladder the prostate should be removed in the male, the whole urethra in the female.

Ten patients, to date, have been treated by total cystectomy and uretero intestinal anastomosis. One is alive, a woman over three years following operation. There is no evidence of recurrence, the renal function as measured by the nonprotein nitrogen is normal and intravenous pyelography shows renal pelvis in satisfactory outline. Of the nine patients dead, two of the earlier ones died as a direct result of operation which was imperfect in one way or another. The remaining seven patients have died of recurrent cancer at shorter or longer periods after operation. In none of these how-

ever, was there any further acute difficulty on the part of the urinary tract. The patient longest to survive operation lived just over eight years following cystectomy. Until the last year of his life he had been well and active. Signs of recurrent malignancy then appeared in the region of the lower rectum. Of this he died about twelve months later.

From my experience with these patients especially when comparing their postoperative careers with those of patients whose bladder carcinoma has been treated by radium or various combinations of radium and partial excision, I cannot but feel that total cystectomy should be employed more often than has been done in the past in our fight against vesical carcinoma.

## REFERENCES

1. Cancer of the bladder. Report of the Registry for Carcinoma of the Bladder. J. Urol. 51:142, 1934.  
Walters, Waltman: Transplantation of ureters to recto-sigmoid and cystectomy for exstrophy of the bladder. Report of 76 cases. Am. J. Surg. 16:16, 1932.

## URETERORECTAL ANASTOMOSIS\*

BY THOMAS N. HEPBURN, M.D. †



PLATE 1. Shows two normal kidneys and ureters before operation.



PLATE 2. Taken one week after the right ureter has been anastomosed with the rectum. Note: there is no secretion of urine at that time. The left kidney is doing all the work.

If all urologists had been as scientific and judicious as Dr. Quinby, the impulse for me to speak on this subject would not have arisen,

Read at the Annual Meeting of the New England Surgical Society, Burlington, Vermont, September 22, 1934.  
Hepburn, Thomas N.—Lecturer, Hartford Hospital. For record and address of author see "This Week's Issues" page 524.

and I hope you will look upon my remarks as practically a discussion of one phase of his much more important subject.

About ten years ago the urge to save time seemed to take hold of urologists in an effort to evolve a technique which would allow them to implant simultaneously both ureters into the bowel and thus repudiate the experience of the preceding twenty years that a unilateral implantation, one at a time, was a safer procedure, and it seems to me that this group of workers has become so engrossed in the surgical, technical detail, that they have lost sight of the simple surgical principles which Dr. Quimby certainly had in mind, and which anyone with experience

and you should certainly try to have both those structures in as nearly normal condition for successful healing as possible, that is, the rectal wall, and the small ureteral tube. The third surgical principle is that this procedure should be done in a way so as to preserve it from being infected from the intestinal cavity as far as possible.

Unfortunately, in a large proportion of the



PLATE 4 Taken four weeks following the anastomosis. The excretion of the Skiodan is now as good as on the left side. Dilatation has slightly improved. It is now safe to work on the left side.



PLATE 3 Taken two weeks following the anastomosis. The right kidney is beginning to function and the pelvis and calyces are quite dilated as one would expect because of the obstruction at the anastomosis.

on living human beings and not dogs, must have in mind.

It is to recall your minds to these fundamental surgical principles that I am speaking now.

The first surgical principle to be kept in mind, it seems to me, is the preservation of a continuity of renal function. The second surgical principle to keep in mind is that you are doing plastic work on rather thin, delicate tissues,

cases in which ureterorectal anastomosis is indicated, one member of this partnership, your ureteral tube, is rarely in a normal, good condition, and every effort should be made to get it in as good condition as possible, before attempting to take it to partnership in a plastic procedure.

I should like to show you some rather poor slides to illustrate what happens to a ureter even when in good condition, following the traumatic procedure which, however delicately done, is sufficiently traumatic to cause an edema sufficient to close the drainage of that ureteral tube.

The conclusion, therefore is very obvious that where we are dealing with two normal kidneys and ureters, only one ureter at a time should be implanted and at least two weeks should intervene between the operations, and that this period can now be surely checked up with safety by the use of x-ray plates following the intravenous injection of Skiodan.

Unfortunately, however in the majority of cases where this operation is indicated one or both of the ureters are not normal and we have not always two kidneys. The most frequent in

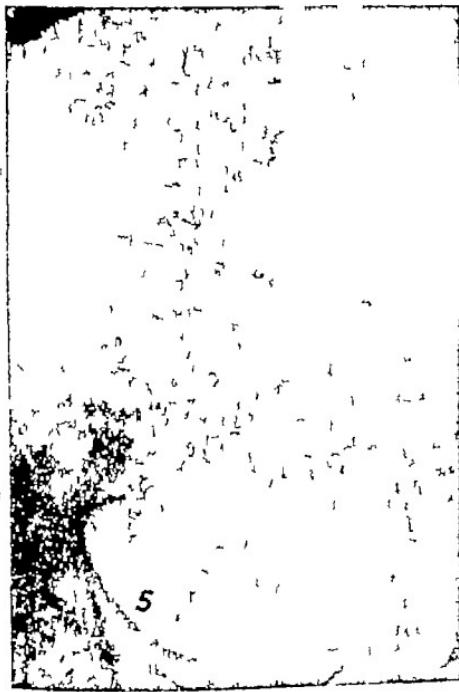


PLATE 5. Taken one week after the left ureterorectal anastomosis. There is no function of the left kidney at this time.

dication for this operative procedure is some pathology of the bladder such as cancer which has caused secondary dilatation and infection of the ureter, and one kidney may have been either removed surgically at some previous operation or be functionally destroyed by infection. In this group a preliminary nephrostomy draining the infected or dilated side or sides is as logical and as necessary before attempting a ureterorectal anastomosis, as a preliminary cystostomy is necessary before doing work on the urethra.

For convenience we can divide the preliminary nephrostomies into three groups

### 1 Where one Ureter is Infected or Dilated

In this group the procedure should be to do your ureterorectal anastomosis on the normal side and at the same sitting do your nephrostomy on the infected or dilated side, provided this side is functioning well. If not functioning well preliminary bilateral nephrostomies must be done before any attempt at anastomosis. Two weeks later the good ureter may be anastomosed, and two months later the infected side may be done after investigation.

### 2 Where both Sides are Infected and Dilated

Here a bilateral nephrostomy can be done at one sitting. Then when the ureters have shrunk to their normal size, a bilateral implantation into the rectum may be done at one sitting,



PLATE 6. Taken two weeks after the anastomosis on the left side. The function has come back to this kidney now and the usual dilatation is noted. This picture is typical of the appearance of the pelvis and calyces after a bilateral anastomosis has been done. It can be readily seen that had both of the ureters been anastomosed with the rectum at one operation, the probability of death from renal obstruction would have been very great.

your nephrostomies in this case acting as perfectly safe outlets from the kidneys. Before attempting the anastomosis of these dilated, infected ureters their condition should be tested by direct pyelo-urograms made by injecting

and I hope you will look upon my remarks as practically a discussion of one phase of his much more important subject

About ten years ago the urge to save time seemed to take hold of urologists in an effort to evolve a technique which would allow them to implant simultaneously both ureters into the bowel and thus repudiate the experience of the preceding twenty years that a unilateral implantation, one at a time, was a safer procedure, and it seems to me that this group of workers has become so engrossed in the surgical, technical detail, that they have lost sight of the simple surgical principles which Dr. Quinby certainly had in mind, and which anyone with experience



PLATE 3 Taken two weeks following the anastomosis. The right kidney is beginning to function, and the pelvis and calyces are quite dilated as one would expect because of the obstruction at the anastomosis.

on living human beings and not dogs, must have in mind

It is to recall your minds to these fundamental surgical principles that I am speaking now

The first surgical principle to be kept in mind, it seems to me, is the preservation of a continuity of renal function. The second surgical principle to keep in mind is that you are doing plastic work on rather thin, delicate tissues,

and you should certainly try to have both those structures in as nearly normal condition for successful healing as possible, that is, the rectal wall, and the small ureteral tube. The third surgical principle is that this procedure should be done in a way so as to preserve it from being infected from the intestinal cavity as far as possible

Unfortunately, in a large proportion of the



PLATE 4 Taken four weeks following the anastomosis. The excretion of the Skiodan is now as good as on the left side. Dilatation has slightly improved. It is now safe to work on the left side.

cases in which ureteroilectal anastomosis is indicated, one member of this partnership, your ureteral tube, is rarely in a normal, good condition, and every effort should be made to get it in as good condition as possible, before attempting to take it to partnership in a plastic procedure

I should like to show you some rather poor slides to illustrate what happens to a ureter even when in good condition, following the traumatic procedure which, however delicately done, is sufficiently traumatic to cause an edema sufficient to close the drainage of that ureteral tube

I have done twenty-one total cystectomies. Eleven were accompanied by ureterostomy of whom seven lived and four died. Nine were accompanied by ureteroenterostomy. Five lived and four died. One, accompanied by nephrostomy, died a year later with formation of renal stone. Of those who recovered, five are apparently well. Five died of carcinoma, one of cerebral hemorrhage and one of renal sepsis one year later.

DR. EL GRANVILLE CRABTREE (Boston Mass.) Mr President and Gentlemen In this excellent consideration of total cystectomy and ureterorectal anastomosis by Dr Quinby and Dr Hepburn possibilities of radical surgery for cancer of the bladder are skillfully set forth.

With these possibilities in mind let me call to your attention that if there is one phase of surgery in which the sociological side needs consideration it is cancer of the bladder. There is no doubt that in exstrophy of the bladder and other urinary abnormalities it is necessary to place these unfortunate patients in such a position that they will be acceptable to society. In cancer of the bladder duration of life is surprisingly short and one must stop to consider which of the various methods of stream diversion is best for the patient, in consideration of his disease, his probable duration of life and his acceptability to society.

There are now available in literature approximately two hundred end results of ureterorectal anastomosis. It is extremely important to note that the great majority of these are operations for urinary abnormalities, such as exstrophy of the bladder. There is undoubtedly some luck, required along with the necessary skill in the performance of this operation. While many of the ureters seem to escape dilatation some degree of dilatation of a more temporary nature is to be expected in most implants, and in one case, after twenty years autopsy showed bilateral pelvic and ureteral dilatation and that the patient died at that remote date, of bilateral pyonephrosis.

Dr Hepburn has emphasized an important point when he states that a recently implanted ureter drains poorly and greatly embarrasses the kidney. Such facts should influence our separation of the parts of the implantation to make the operation bearable to the patient. Unfortunately the ureteral implantation into the rectum has not had a perfectly fair chance because there has been a tendency to use the worst cases for implantation. Many of these cases already have extensive ureteral and pelvic dilatations. Exploration of the peritoneum often initiates further cases, because of evidence of metastasis already taking place. One must not forget that loss of vitality in cancer cases often prevents recovery from an operation which would be tolerated in a non-cancer patient.

While one may make three or possibly five part operations, as Dr Hepburn has indicated, for the benefit of the urinary tract, that much surgery is apt to be too heavy a burden for an advanced cancer patient.

We must not forget that the long hospital stays and the long convalescence of such individuals may use up the greater portion of his remaining life, because statistics show that there are only a few cases of cancer of the bladder after transplant, alive at the end of a two-year period. Dr Quinby has truly stated that these patients with cancer of the bladder are extremely miserable but can be relieved by urinary stream diversion. While I agree that urinary diversion by rectum is best there are instances where in view of the above considerations, nephrostomy, ureterostomy and other procedures of less magnitude than transplant will add to the com-

fort of the patient and leave him more time to live after operation. Adequate arrangements for both nephrostomy and ureterostomy can be made and these patients can be managed. They will prove to be a great source of trouble to themselves, to the family and doctor but they will have a better life even though a short one.

DR. HOWARD M. CLUTE (Boston, Mass.) In our experience with transplantation of the ureters into the rectum and total cystectomy we have been convinced that many more of these radical procedures for the treatment of bladder cancer should be employed. We agree with Dr Quinby that in suitable cases early operation should be urged before long preliminary or temporizing methods have made the chance of cure less probable.

We have no hesitation in employing very radical measures for the removal of malignancy in the stomach the rectum or the lung. Now that removal of the bladder has been made possible by Coffey's operation for transplanting the ureters, the bladder should be more frequently included in the group of organs which can be radically attacked for removing cancer.

Dr Hepburn's remarks about drainage of the infected kidney preceding or following ureteral transplantation are very timely and should increase the operability of certain cases having ureteral obstruction. It would seem to us that early intervention and nephrostomy in infected kidneys after transplantation would be preferable to preliminary kidney drainage in most cases and the possibility of needing such a procedure after ureteral transplant should certainly be recognized early during the postoperative period if there is evidence of serious failure in kidney infection. By emphasizing this need of dealing with certain infected kidneys before and after ureteral transplantation, Dr Hepburn has given us material of real value.

DR. WILLIAM C. QUINBY (Boston Mass.) The interest shown in the discussion of this subject gentlemen proves its importance. I thank you for it.

Dr Hepburn's suggestion of the advisability of nephrostomy is important. We have done it twice but I should hesitate to do nephrostomy until I find it necessary. I would not do it as a preliminary operation. I would do it, however, in the case in which it is necessary to transplant a ureter which is grossly abnormal. In such cases a transplantation and nephrostomy at the same time will relieve the kidney markedly and possibly ensure a successful transplantation which might not otherwise be obtained.

Nephrostomy is a very easy procedure by the English method of approaching the kidney from the back. The patient lies prone with a pillow under the lower ribs, and a vertical incision is made above the last rib the outer end of which is resected. One comes immediately after severing the latissimus and erector spinae muscles onto the pelvis of the kidney. We have used pyelostomy rather than nephrostomy. It is a quick operation which can be done under local anesthesia, and we have had occasion to do it twice.

I did not understand that Dr Smith told us why he has changed from ureteroenterostomy to ureterostomy onto the abdomen inside the spine of the ileum. I recognize the advantages of the operation which he suggests but I think the disadvantages outweigh these from the patient's point of view.

Dr Clute's remarks about having to open the abdomen several times if one is going to make a separate anastomosis of each ureter and then at a third session remove the bladder are interesting for as a matter of fact, the cystectomy does not open the peritoneal cavity at all. As a rule it has been ur-

custom to transplant one ureter (always, if possible, the one supplying the better kidney) so that urinary function is established from the better kidney first, and then at a second operation, transplantation of the second ureter with excision of the bladder is done

I hope we will all apply ureteroenterostomy much earlier than we have in the past

DR. SMITH I agree with that entirely

DR. THOMAS N HEPBURN (Hartford, Conn.) Mr President, I didn't take advantage of my opportunity to express my entire agreement with the impulse back of Dr Quinby's urging you to more radical surgery on these cases of cancer of the bladder. I think it is splendid to have him repeat his faith and determination to try to eradicate this disease of the bladder by adequate surgery.

In regard to the multiple operations which my surgical experience would suggest, I do not mean as many surgical sittings as Dr Clute apparently

visualized One implantation and a nephrostomy can be done at one sitting, or the next implantation at a second sitting, and the cystectomy (which would not be, as Dr Quinby says, an intra abdominal procedure) at a third sitting

I should like to suggest another difficulty, a difficulty I had once taught to me by sad experience, and that is, the development of an abscess at the end of the short stub of ureter going into a very pussy bladder. Very little mention has been made as to how that ureteral stump must be managed. If you tie off that with an absorbable suture and the patient is allowed to hold pussy urine too long, some of it may force its way out through the ureter. There is a very possible source of abscess at the ureteral stump which may be fatal. So I would suggest that you keep this danger in mind and either place an inlying catheter in the bladder in these cases, or else ligate that ureteral stump with a non absorbable suture which will last until you do your total cystectomy.

#### AN ENDORSEMENT OF THE INSURANCE PRINCIPLE

RESOLUTION OF HOUSE OF DELEGATES, CALIFORNIA MEDICAL ASSOCIATION, MARCH 3, 1935

Whereas The studies of the Committee of Five of the California Medical Association have shown the inability of a certain percentage of our population to adequately finance the cost entailed by illness, and

Whereas Because of the economic situation proper medical care is beyond the reach of this population group, and

Whereas It has been established that this problem can be alleviated by the utilization of the insurance principle,

Now, Therefore Be It Resolved, That the House of Delegates of the California Medical Association recommends that legislation be proposed seeking to establish a health insurance system, mandatory as to certain population groups and voluntary as to certain population groups, which shall include the following principles

- No 1 The patient shall have absolutely free choice of physician and hospital,
- No 2 The medical profession shall determine the scope, extent, standards, quality, compensation paid for, and all other matters and things related to, the medical and medical auxiliary services rendered under the system,
- No 3 There shall be no provision for cash benefits,
- No 4 The patient shall receive adequate treatment and his physician shall receive adequate compensation,

No 5 The foregoing principles shall be maintained with such modifications thereof as may from time to time be recommended, or approved by the profession,

And Be It Further Resolved, That the California Medical Association immediately offers its full aid and cooperation to the Interim Committee of the Senate of the State of California charged with the study of this problem to the end that any measure which shall be passed establishing a health insurance system at the 1935 session of the California Legislature shall contain the above principles,

And Be It Further Resolved, That there be formed a special committee authorized and empowered to act herein, constituted as follows: the Legislative Committee of the Association and three members of the Association to be appointed by the Speaker of the House

#### FOOD AND DRUGS OFFENDERS

Two men have each been sentenced to two years in a Federal penitentiary for conspiracy to violate the Federal Food and Drugs Act by falsely labelling and selling "Warm Springs Crystal Compound" as coming from the Georgia Springs of that name. The "crystals" did not come from that source and were only a simple laxative composed of Glauber's salts, similar in action to Epsom salts. The "crystals" cost only a few cents a pound and were sold for a dollar a pound.

The men entered a plea of guilty and were sentenced to one year in Federal prison. The company in its literature, its correspondence with agents and particularly in conversation with customers, sought to use the name Warm Springs to commercial advantage. Salesmen were urged to point out the beneficial effects of the Springs — *Bulletin, U. S. Department of Agriculture*

SIGNIFICANCE OF POSTOPERATIVE RISES OF  
BLOOD NONPROTEIN NITROGEN\*

BY HARRY A. DEROW, M.D. †

## INTRODUCTION

THE significance of postoperative elevations of blood nonprotein nitrogen has not been sufficiently emphasized. Thus discussion concerns itself not with nephritic or hypertensive patients but with those who have normal blood pressures and show no clinical evidence of renal abnormality preoperatively. Reports have appeared in the literature on the effects of operations in nephritic and hypertensive patients.<sup>1-4</sup> O'Hare and Hoyt recently summarized their experiences as follows: "We would say that a patient about to be operated upon, and having any form of nephritic or hypertension disease, deserves a preoperative diagnosis of his medical ailment and an evaluation of the degree of impairment of the organs involved. He deserves an intelligent, skillful, rapid surgeon who understands the medical problems involved as they apply to that particular surgical patient. In such hands, unless he is unfortunately afflicted with marked vascular or myocardial impairment, he should feel that his chance for recovery is almost as good as the patient without nephritis or hypertension. If chronic nephritis with hypertension is present, the prognosis is definitely worse. The degree of renal impairment indicated by the phthalein excretion or the blood urea nitrogen is usually the determining factor."

During the past few years, at the Beth Israel Hospital, Boston a study has been made of the clinical course of a small group of surgical patients who presented an elevated blood non protein nitrogen and a scanty concentrated urine during the first few postoperative days. The urine output was found to be small, of high specific gravity, and wholly inadequate to rid the patient of the accumulated nitrogenous waste products associated with the operation as well as with the immediate postoperative period. Attempts were therefore made to increase the urinary volume. The rise of urine output was followed in a few days by the return of the blood nonprotein nitrogen to the normal level.

The following case is illustrative of those we have seen.

From the Nephritic Clinic of the Beth Israel Hospital, Boston, Mass., and the Department of Medicine, Harvard Medical School. Read before the American College of Surgeons, October 19, 1931.

\*Derow, Harry A.—Assistant Physician Beth Israel Hospital. Per record and address of author see "This Week's Issue" page 524.

J. W., B. I. H. 24184 Male, aged sixty four. Operation for perforated peptic ulcer. Perforation three hours old at time of operation. Blood pressure and urine normal one month before operation.

	Total Fluid	Urine Output	N.P.N. Gr	Sp	Alb	B.P.
Operation	4000 cc.	100 cc	44 mg	1.024	0	90/50
1st p.o. day	2100	450	65	1.016	0	100/60
2nd	2 00	1850	93	1.020	0	100/70
3rd	4000	1700	53			100/70
4th	3400	1350	36	1.014	0	120/80
5th	3800	1870	32	1.014	0	116/80

## PATHOLOGICAL PHYSIOLOGY

At this point, it may be of interest to review very briefly the more important factors relating to the operative and postoperative period which tend to increase the level of the blood nonprotein nitrogen. The blood nonprotein nitrogen is a mixture of substances including urea ammonia, amino acids, creatine, creatinine and other nitrogenous substances spoken of as "undetermined nitrogen". Urea is by far the most important constituent. The concentration of nonprotein nitrogen in the blood of normal persons varies from 25 to 40 mg per 100 cc and is chiefly determined by the rate of protein catabolism and the urinary output of nitrogen. If the volume of fluid in the body available for urine formation is small in comparison with the waste nitrogen requiring elimination the level of nonprotein nitrogen in the blood will rise. Unless one takes the urine volume and the rate of nitrogen catabolism into consideration, the nonprotein nitrogen of the blood may be incorrectly interpreted as a criterion of renal function.

Lashmet and Newburgh<sup>5</sup> found that the normal individual excretes thirty five to forty grams of solids per day, and that fifteen grams of water are required to carry off each gram of solids with the kidney working at maximum concentration. Under normal conditions if the kidneys are not supplied with sufficient water for the elaboration of about 600 cc. of urine, retention of nitrogenous wastes in the blood occurs. They found that in patients with renal disease the kidneys cannot concentrate in a normal manner and as high as forty grams of water may be needed to carry away each gram of solids in the urine. Van Slyko<sup>6</sup> has found that the limit beyond which the urine volume will no longer carry urea with it is about 2500 to 3000 cc. per day. The concentrating ability of the kidneys of surgical patients may be readily determined by observing the specific gravity of the

first urines passed after operation as well as those in the preoperative period. A specific gravity of 1.024 or higher is indication of normal concentrating power.<sup>7</sup> One can be certain of an adequate supply of available water for urine formation if the specific gravity of the urine is definitely below the known normal concentration power. Therefore, the volume of urine and its specific gravity is a reliable index of the adequacy of the supply of water.

Fishberg<sup>8</sup> has used the term "prerenal deviation" to apply to the underlying abstraction of fluid from the blood which produces oliguria with unimpaired concentrating ability of the kidneys. The operative and postoperative water losses by the skin, lungs, vomitus, diarrhea and hemorrhage reduce the supply of water necessary to carry off in the urine the nitrogenous wastes accumulated in the blood as a result of the operation and postoperative period. The loss of water by diarrhea and vomiting is accompanied by a serious depletion of sodium and chloride.<sup>9</sup> The prolonged postoperative use of pituitary extract (pitressin), by its anti-diuretic effect, may seriously reduce the urine volume and thereby contribute to the further accumulation of nonprotein nitrogen in the blood. In surgical shock, and in those cases in which spinal anesthesia is employed, the lowering of the blood pressure is associated with an enormous decrease in the urine volume, partly on account of the lowered filtration in the glomeruli and partly on account of the considerable reabsorption of water in the tubules.<sup>10</sup> In surgical shock, there may also be concentration of the blood with increased percentage of plasma proteins and consequent rise in the colloid osmotic pressure of the plasma, a factor that would tend further to diminish glomerular filtration.<sup>7</sup>

The accelerated destruction of the body protein associated with dehydration, hemorrhage, fever, diarrhea, vomiting, operative trauma, and the condition which necessitated the operation increases the nitrogenous wastes in the blood.<sup>5</sup> In the presence of marked oliguria, the total excretion of nonprotein nitrogen in the urine therefore falls far behind the amount produced, and it accumulates in the blood. The level to which the nonprotein nitrogen of the blood may rise in a very short time is remarkable, values of over 200 mg per 100 cc of blood may be reached in several days after the onset of severe vomiting.

In cases of pyloric or intestinal obstruction, as a result of the vomiting, the consequent loss of gastric juice, and the destruction of body protein, there develops oliguria and the combination of azotemia and hypochloremia. In consequence of the loss of chloride, alkalosis develops the bicarbonate substituting in the blood for the chloride deficiency. In many of

these patients, especially in the later stages, circulatory collapse may play a major rôle in the genesis of the oliguria and the resulting azotemia.<sup>7</sup>

Postoperative rises of the blood nonprotein nitrogen attributed to general anesthesia are more probably due to toxic destruction of protein resulting from trauma, shock, dehydration, and the condition which required operation.

Following a gall bladder or liver operation, an elevated blood nonprotein nitrogen may be due to the development of an acute nephritis, the so-called liver-kidney syndrome.<sup>11 12 13</sup>

Elderly patients, with heart failure and resultant passive congestion of the kidneys and oliguria following operation, may show nonprotein nitrogen rises in the blood.

#### TREATMENT

The renal function of patients to be operated upon should be carefully studied. The ability to concentrate the urine to a specific gravity of not less than 1.024 and the absence of albuminuria are the criteria for normal kidneys. For at least four or five days postoperatively, daily determinations of the blood nonprotein nitrogen and examinations of the urine should be performed. The volume of the urine excreted must be carefully measured. Postoperative bladder retention must be watched for. Blood pressure readings should frequently be made during the immediate postoperative period, and at least once daily thereafter.

The keystone of the treatment of postoperative patients with elevated nonprotein nitrogen of the blood and oliguria with normal concentrating ability consists in the production of a daily urine output of at least 1500 cc. It must be stressed that the volume of urine and not the volume of fluids given is important. Normal sodium chloride solution should be given by mouth, hypodermoclysis or vein, in sufficient quantity to bring about such a urinary volume. In cases of azotemia and hypochloremia in gastro-intestinal tract obstruction, the administration of saline solution intravenously produces remarkable improvement. Isotonic glucose solution by vein or hypodermoclysis will not only supply additional fluid but will lessen the toxic destruction of protein by supplying carbohydrate, and will prevent ketosis.

Coller's studies on dehydration attendant on surgical operations have emphasized the important rôle dehydration plays in causing a low postoperative urinary output.<sup>14</sup> He has pointed out that the urine volume may not be sufficient to dispose of the ordinary nitrogenous waste products, so that retention in the blood occurs. He has shown the need for supplying a sufficient water intake to provide for the insensible loss of water from the skin and lungs and yet insure an adequate volume of urine. Coller

wisely states that "there are many causes of anuria but none of them should be considered until the water exchange of the few previous days has been checked over and dehydration as the etiological factor eliminated."<sup>11</sup>

The administration of pituitary extract for the prevention and treatment of postoperative intestinal distention and paralytic ileus must be carefully supervised in order to avoid the antidiuretic effect of the drug. The lowered blood pressure associated with shock and spinal anesthesia must be counteracted by ephedrine, caffeine blood transfusion, etcetera.

If the urinary output is not appreciably increased in several days by the preceding treatment, the presence of anuria is to be seriously suspected. Postrenal causes for the anuria must be sought since the majority of true anurias are of obstructive origin<sup>12</sup> and appropriate treatment should be instituted to establish an adequate urine flow. It is of the utmost importance that patients who present the possibility of postoperative anuria should be carefully studied by a surgeon, urologist and internist, all working together.

#### SUMMARY

1 Postoperative rises of the blood nonprotein nitrogen in patients with normal renal function may be due to

- a. Oliguria, as a result of
  - (1) Insufficient water available for urine formation as a consequence of operative and postoperative water losses.
  - (2) Prolonged postoperative use of pituitary extract (pitressin).
  - (3) Lowering of the blood pressure associated with shock and spinal anesthesia.
  - (4) Heart failure
- b. Increased destruction of body protein accompanying the operation and the postoperative period
- c. Acute nephritis (liver kidney syndrome)
- d. Postrenal (obstructive) anuria

2 Postoperative rises of the blood nonpro-

tein nitrogen in patients with normal renal function may be avoided or eliminated by the

- a. Prevention of dehydration by a sufficient intake of normal salt solution to insure a urine volume of 1500 to 3000 cc. per day
- b. Reduction of toxic destruction of body protein by the administration of isotonic glucose solution
- c. Avoidance of prolonged use of pituitary extract (pitressin)
- d. Maintenance of a normal blood pressure.

3 If the urine output is not increased despite these therapeutic measures, the presence of postrenal (obstructive) anuria should be investigated and appropriate treatment instituted to establish an adequate urine flow.

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## CONTRACEPTION AS A POSSIBLE MEANS OF REDUCING GYNECOLOGICAL MORBIDITY

BY ERIC STONE, M.D.†

### I. APPLICABILITY IN GYNECOLOGICAL CASES\*

WHILE the social and economic aspects of the practice of contraception have received wide publicity, its possible rôle in the prevention of gynecological morbidity has scarcely been touched upon. Indeed, a review of about

two hundred articles on elective motherhood and a survey of gynecological titles in the Index Medicus for the past four years failed to reveal a single article on the subject. However, three years' association with an active birth control clinic and eight years of work on the gynecological service of a large general hospital gave the impression that many repeating hospital patients could have been saved reentry had they received contraceptive advice after one of their

\* From the Gynecological Service of the Rhode Island Hospital. Rhode Island Birth Control Clinic. For record and address of author see "This Week's Issue," page 514.

preceding admissions This conviction led to a twofold study (1) the examination of the case histories of all patients admitted to the Gynecological Service of the Rhode Island Hospital in 1932, and (2) a study of the records of the first 800 cases applying to the clinic of the Rhode Island Birth Control League

In the Rhode Island Hospital study the cases of cancer were omitted, for although repeated pregnancies and the infections and lacerations often attending gestation and childbirth may be etiological factors in the development of malignancy, yet their exact rôle is not clearly defined All cases in which the admission was in no way related to pregnancy were also excluded The first group made up 12.8 per cent of all admissions and the second 37.8 per cent The cases selected for minute scrutiny were those in which hospitalization had become necessary as the immediate or delayed results of pregnancy These made up 49.4 per cent of all admissions, or 327 cases

One hundred and eighty-nine patients or 57.8 per cent (28.6 per cent of all admissions) entered because of abortion or miscarriage In 64 instances interference was admitted by the patient and 29 of these gave a history of more than one, the total preceding the current criminal abortion being 39 Under spontaneously interrupted pregnancies were placed about 60 cases in which artificial termination was gravely suspected, including the cases of 19 unmarried girls, but such interference was stoutly denied by the patients These, added to those which were clearly spontaneous, brought the number of such cases up to 125 Of these, 109 previously had had similar difficulties, many several times, so they totaled 221 interrupted pregnancies, exclusive of the present illness Indeed, six of the patients had each been in the same hospital five times before for the same condition

Two patients had therapeutic abortions carried out, each having submitted to a similar procedure in their preceding pregnancy

Two cases were treated for toxemia of pregnancy, each had been treated for the same condition in preceding pregnancies, all together, they had had seven such illnesses before the present hospitalizations

Seven cases of ectopic pregnancy were operated upon, two having previously had the other Fallopian tube removed because of the same condition

The service cared for 15 patients with postpartum sepsis Three cases gave histories of sepsis following earlier pregnancies also, and one case had had two former hospitalizations, having had an acute exacerbation of a chronic cellulitis following each of her three pregnancies One of these patients became insane while in the hospital and while her physical

condition has been restored to relatively normal, she was discharged to a mental hospital

Chronic pelvic inflammation following earlier puerperal sepsis accounted for 33 admissions Twenty-eight had been sterile since the original infection and eight had had previous operations in which one tube or tube and ovary had been removed Five had a flare-up leading to the present admission due to a further pregnancy

Fifty-nine cases were admitted for relief of various forms of pelvic relaxation, the results of childbirth Seven of these individuals had undergone previous operations for the same condition, subsequent labors having torn out the repaired structures In several cases this process had been repeated more than once, so that these seven women had had a total of 13 operations already performed on them before their entry in 1932 In 40 cases the condition dated from their first or second labor, but further pregnancies had increased the relaxation to the point where surgical relief was necessary in all but four cases

Five patients entered for the repair of vesico-vaginal or recto-vaginal fistulae produced during labor All had already had one such operation performed, and two had had two previous repairs All were again operated upon, with a failure to close the tract in two instances All patients had had contracted pelvis, and all their labors had been hard and difficult However, in only one case was the fistula present in a primipara

One ventral hernia was operated upon, the rupture occurring during the patient's eighth pregnancy This was the second attempt to effect a repair

One case had a second dilatation done for the relief of a stenosis of the cervix due to chronic cervicitis developing as a result of infection during her fourth labor

One patient had a laparotomy, while pregnant, because of acute symptoms caused by adhesions between the uterus and intestines The adhesions had been known to be present before the pregnancy took place

One pregnant case was admitted because of severe abdominal pain, but cleared up so rapidly that she was discharged without any definite diagnosis having been made

Eleven cases of pyelitis of pregnancy were treated Eight of the cases had had a total of twelve similar disabilities during earlier pregnancies One case, anuric on admission, died; she was found to have multiple bilateral renal calculi as a fatal complication of a unilateral acute pyelitis She had had severe pyelitis with each of her three pregnancies

For a résumé of these cases see table 1

On these 327 cases 126 dilatations and curetages were carried out, 53 pelvic repairs, 22 hysterectomies, 7 salpingo-oophorectomies and

8 cervical amputations were further operations on this group. Of those mutilated by hysterectomies, five were under 35 years of age.

The present illnesses of these women caused them a total hospitalization of 4,079 days and a total estimated disability of 16,345 days, probably actually much more than this, as in computing this figure, those for the most favorable case were applied to all. To the social waste must be added the future life of two women permanently invalidated, one insane and the other

It is obvious that a considerable number of these recurrent illnesses would not have occurred had the women remained free of pregnancy. Of course, the 22 who had their uterus removed and several in which the second Fallopian tube was removed will not again be admitted for complaints rising from further pregnancies. But this type of contraception is unacceptably drastic. It is equally obvious that it is not the surgeon's place to advise against further pregnancies where a woman has had

TABLE 1  
HOSPITAL ADMISSIONS IN RELATION TO PRECEDING MORBIDITY  
DUE TO PREGNANCY

Morbidity	No of Admissions 1932	No of Cases having previous Identical Morbidity	Per Cent of Preceding Identical Illnesses occurring before the current illness*	Total Number
Induced Abortion	64	29	46	39
Spontaneous Abortions	125	109	71	221
Therapeutic Abortions	2	2	100	2
Toxemia of Pregnancy	2	2	100	7
Tubal Pregnancy	7	2	28	2
Postpartum Sepsis	15	3	20	5
Chronic Pelvic Inflammation	33	5	11	5
Pelvic Relaxation, etc	59	7	11	13
Vaginal Fistula	5†	—	—	—
Ventral Hernia	1	—	—	—
Stenosis of Cervix	1‡	—	—	—
Abdominal Adhesions	1	—	—	—
Pyelitis of Pregnancy	11§	8	72	12
No Diagnosis	1	—	—	—
Totals	327	167	51%	306

This does not include other types of gestational and puerperal disease which occurred in the same patient, as for example, toxemias in previous pregnancies, whereas the present admission was due to induced abortion. Such mixed cases occurred 134 times in the entire group. Recording them would have nearly doubled the length of the paper.

\*Seven previous repairs had been done on these patients, but in no instance did the recurrence happen to be due to pregnancy so previous morbidity was not listed.

†Second operation for this condition, but there had been no intervening pregnancy.

‡One case had severe pyelitis with all of her three pregnancies, also had multiple bilateral renal calculi, ante ad anuria and died.

ponderable loss of eight women dead. The economic loss to the community was not inconsiderable. The sum total of the cost of hospital care and the loss of earnings of those patients who were gainfully employed amounted to \$25,864.

The one significant feature of this study brought out graphically in table 1, is that 167 or 51 per cent of these women had previously suffered the same disability to the extent of 306 times, i.e., many had had several recurrences of the difficulty. Indeed, the total preceding disability becomes 410 instances if disease due to pregnancy but not identical to the present illness be added. If the present morbidity be included these 167 women have had 605 periods of illness due to child bearing.

no children and is in trouble during her first pregnancy. But where the woman has living children and has just recovered from a morbidity which has already recurred more than once and is likely to recur again, it is certainly the surgeon's duty to prevent further illness on the part of the patient or at least to instruct her so that she may elect or refuse to take as she sees fit the hazards of bearing another child.

A glance at table 1 shows that the recurrent conditions which warrant such advice are in order toxemias of pregnancy, conditions requiring therapeutic abortion, pyelitis of pregnancy, spontaneous abortions, tubal pregnancy, postpartum sepsis, and chronic inflammatory conditions. All cases having undergone pelvic

to sixteen years (several patients came to our care who had been instructed in this technique at older clinics in other cities) Of these, 342 have expressed themselves as being entirely satisfied with the method, while 60 declare they are dissatisfied The reason for their dissatisfaction, for their non-use of the method, and for failure in attempted use of method appears in table 7

TABLE 7  
CAUSES FOR NON-USE OR INCORRECT USE OF METHOD

Reason	Number of Cases
"No confidence"	20
"Too much trouble"	15
Prevented by family or other pressure	11
Mentally or physically incapable of use	10
Did not return for final instruction	11
Frequently neglected to use method	12
Used incorrectly as revealed by check up	14
Had had no intercourse since instruction	10
Patient died	3
Onset of menopause	2
Desired more children	4
No ascertainable reason found for failure	6

Of the 310 women who used the method apparently correctly and invariably, six became pregnant, 1.9 per cent failure A more accurate method of computing the efficacy of the method is possible The yearly expectancy of pregnancy was figured for each case on the basis of the number of years she had been married and the number of pregnancies she had had during that period The number of pregnancies to be expected from that case during the time that had elapsed between her receipt of instruction and her last check-up was then readily reached, and this figure was compared with the number actually occurring That this method is actually ultraconservative in determining contraceptive efficiency is proved by the fact that those women who did not use the method or used it incorrectly in reality had 8.9 per cent more pregnancies than estimated By the simple process of addition, the expectancy for the entire group could be achieved Among those who seemed to have adhered to the correct method, a total of 151.59 pregnancies were expected to have taken place since they received their instruction, actually six occurred, a reduction of 96 per cent of the expected number Of the 92 who failed to use the method or used it incorrectly (this excludes those who had no intercourse and takes the dead up to the date of their death and those who had entered the menopause only up to the onset of the change) 42 pregnancies occurred, whereas 37.77 pregnancies had been estimated from this group Eighty of the 92 had used other birth control methods than the one taught at the clinic and in this group 38 of the pregnancies occurred, i.e., 47.5 per cent failure of other methods.

It is obvious, from the number of cases the clinic was unable to follow and from a study of the reasons for non-use and the incorrect use of the method, that whereas the technique when regularly employed gives excellent protection, nevertheless, close contact with the cases is necessary to get full value from the clinic This is doubly necessary because the type of woman served by the clinic requires frequent supervision to overcome her ignorance and inertia This is a matter of clinic organization and finances and could be readily corrected if the clinic received adequate financial support

It is further clear that a contraceptive technique which required no cooperation on the part of either the woman or her husband would be superior to the method now in use Therefore, the experimental work on production of sterility by immunological reactions is of peculiar significance to those interested in contraceptive methods M J Baskin and S S Rosenfeld, working independently, have used subcutaneous injections of human spermatozoa to produce a spermatoxic substance in the blood in sufficient concentration to render the cervical secretions spermatocidal Baskin reports that a group of 20 were rendered sterile for a year by three injections of the preparation, the condition being prolonged another year by reinjection of those women who desired further protection In Russia, A Mandelstamms and W K Chaykovsky used injections of Prolan-B to render mice indefinitely sterile as long as occasional injections were continued, fertility returning when the injections were stopped They used the same procedure on women who, within a month or six weeks, were to have one or more ovaries removed On the examination of the extirpated organs they found that the same degenerative changes had occurred in the follicular system that they found in their experimental animals They question the harmlessness of the procedure, both as regards the woman and her subsequent offspring (References 10-14)

An incidental feature of these investigations was a sidelight on the question of the total number of abortions occurring in the community Of the 147 admittedly induced abortions occurring in the histories of the clinic patients, only 1 in 11 caused sufficient disability to require hospitalization\* The Rhode Island Hospital cares for about half of the charitable gynecological work of the community (a population of about 300,000) As noted above, 64 of the 1932 admissions were for admitted induced abortions and 19 more believed to be in this state, a total of 83 In all the hospitals there were probably at least 166 such cases Multiplying

\*In this poverty stricken group there were probably greater hazards attending such procedures than among the well-to-do Therefore, the total figures derived by using this 1-11 ratio will give a total which is an understatement rather than an exaggeration.

this figure by 11, the estimated yearly total for Providence becomes 2656. Using this figure to estimate that for the nation, realizing that the incidence is likely to be higher in a densely populated industrial community than in less urban centers, the national yearly total is estimated at 730,356. This checks closely with the figure of 700,000 reached variously by the White House Conference on Child Health, the U. S. Children's Bureau and the Committee on Maternal Mortality of the New York Academy of Medicine. (References 1-9)

## CONCLUSIONS

1. Fifty-one per cent of the women admitted to the wards of the Rhode Island Hospital in 1932 for morbidity depending on pregnancy are to be expected to have further hospital admissions if they again become pregnant.
2. Thirty four per cent of these women could warrantably have been given contraceptive advice.
3. If such advice had been given and followed it would have been effective in 98.2 per cent of the cases, reducing future morbidity by 33.9 per cent in this group of 327 women.
4. Even with as inefficient check up as the Birth Control Clinic's finances now permit, the reduction would be at worst 9 per cent.

MEMORANDUM RELATIVE TO ATTEMPT TO SUBJECT PHYSICIANS PRACTICING OPHTHALMOLOGY TO THE OPTICAL RETAIL TRADE CODE, BY THE OPTICAL RETAIL TRADE CODE AUTHORITY NATIONAL RECOVERY ADMINISTRATION

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION AMERICAN MEDICAL ASSOCIATION CHICAGO MARCH 1 1935

A letter addressed "To Oculists and Physicians Dispensing Ophthalmic Products" has recently been sent out by the Optical Retail Trade Code Authority 7 East Forty Fourth Street, New York, N. Y. The letter alleges that "physicians selling glasses or servicing prescriptions" come fully within the scope of the Optical Retail Code. The letter has been accompanied or followed by a demand by the Optical Retail Trade Code Authority that the physician to whom it is addressed fill out a questionnaire relative to the nature and extent of the physician's optical business and pay assessments amounting to \$3.00 for each employee in his service. The assessment is for the support of the Optical Retail Trade Code Authority a trade organization.

The Optical Retail Trade Code Authority by which these demands have been made is organized under the National Industrial Recovery Act. The National Industrial Recovery Act does not purport in any way to regulate or control the practice of medicine. It specifically relates to "industry" and "trade" and to industrial and trade associations or

5. Contraceptive technique should be more widely used as a prophylactic against gynecological and gestational disease.

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groups. It relates only to transactions in or affecting interstate or foreign commerce. Under no provision of the act can a physician who confines his work to rendering professional medical services be subjected to any provision of the code or to any assessment under the code.

A person who on his own account commercially buys and sells eyeglasses and spectacles and makes a commercial profit on the transaction is presumably within the purview of the Optical Retail Trade Code even though he happens to be a physician. It is believed however that a physician who buys and sells eyeglasses and spectacles only as the agent of patients for whom he prescribes them and without making any commercial profit on the transaction is not within the terms of that Code. The fact that a physician charges for his professional services in prescribing and fitting glasses and spectacles does not alter the situation.

The American Medical Association has protested against the attempt of the Optical Retail Trade Code Authority to bring physicians as such within the scope of the code that it administers. Pending the adjustment of those protests, physicians who are engaged in strictly professional work are advised to refrain from answering the questionnaire that the Optical Retail Trade Code Authority has sent to them and to refrain from paying the attempted assessment for the support of that Code Authority. The outcome of the protest will be promptly reported in the Journal.

## CASE RECORDS

*of the*MASSACHUSETTS GENERAL  
HOSPITALANTE MORTEM AND POST MORTEM RECORDS AS USED  
IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M D

CASE 21121

## PRESENTATION OF CASE

A thirty-seven year old American housewife entered complaining of epigastric pain and vomiting.

Three years before entry she began to experience colicky epigastric pain accompanied always by generalized goose flesh. The epigastric pain was vaguely localized, never radiated, and usually caused her to press her hands on her abdomen and bend over. The pain was sometimes accompanied by nausea and less often by vomiting, which relieved the pain immediately. The vomitus consisted of recently eaten undigested food and very rarely had streaks of bright red blood. The pain was spasmodic in character and usually lasted for only a few minutes. At the onset of her illness she had about one to four attacks a day about every two or three weeks. These increased in frequency and at the time of admission they occurred about every other day. She had never tried soda or milk to relieve the pain. There was no history of bloody or tarry stools. Her appetite had decreased only very little. During the year before entry she developed marked weakness and easy fatigue. She had lost about ten pounds in weight during the past three years.

The family, marital and past histories are non-contributory.

Physical examination showed a well-developed and nourished woman in no acute distress. Her tonsils were large and ragged. The heart and lungs were negative. The blood pressure was 122/80. There was slight tenderness to the right of the midepigastrium.

The temperature was 98°, the pulse 60. The respirations were 14.

Examination of the urine was negative. The blood showed a red cell count of 4,100,000, with a hemoglobin of 80 per cent. The white cell count was 6,000, 50 per cent polymorphonuclears, 38 lymphocytes, 7 eosinophils, 5 large monocytes. A smear was not remarkable. The stools were soft, brown and showed a negative guaiac test.

A gastro-intestinal series performed in the Out-Patient Department one month before entry showed an obstructing lesion at the pylorus with 60 per cent retention of barium. An examination after lavage showed a polypoid growth, without stalk, 2 centimeters in diameter,

located within the last inch and a half of the stomach. At the end of each of the four examinations there was a large residue in the stomach. A gastroscopic examination showed a small, nodular, nipple-like excrescence, bright red in color and about 5 millimeters in diameter, located on the anterior wall of the pylorus toward the lesser curvature. The lesser curvature appeared irregular and indurated without any peristalsis passing over it. There was one slightly depressed area in this region suggesting an ulceration. The greater curvature and posterior wall were very red.

Two weeks after admission operation was performed. She had an uneventful convalescence and was discharged two weeks after operation.

## DIFFERENTIAL DIAGNOSIS

DR CHESTER M. JONES "Three years before entry she began to experience colicky epigastric pain accompanied always by generalized goose flesh." I do not know what that means, unless it means that she did not have hives. At any rate I do not think it is an allergic manifestation.

There are one or two things that one would like to know that are not in the history. One is the relation of the pain to the intake of food. There is no mention when it came, whether it was immediately after or during a meal, or many hours after. The only thing it says is that it was sometimes accompanied by nausea and less often by vomiting, which relieved the pain immediately. It might have been an hour or so after induction. It does not sound to me like a good ulcer story, and from the story alone I should not think that she had peptic ulcer. She never tried to relieve the pain by food or soda and that might give some additional information if we knew what that did. The history suggests a gastric lesion. There are no difficulties in swallowing and no apparent trouble in the esophagus. I do not think the trouble is below the stomach, unless in the first portion of the duodenum. The relief of her symptoms by vomiting or by pressure is of some interest and it seems to me it is a little suggestive of gastric lesion or something that might be called gastritis.

Physical examination does not help any. I think it is of no real aid in making the diagnosis. The red count is diminished but not very low for a woman.

The only thing remarkable in the laboratory examination is the absence of abnormal findings plus possibly an eosinophilia of seven per cent, which may have significance, although I do not know any condition in the stomach that is going to give eosinophilia and I cannot link it in with the story. The obvious thing to do was to take an x-ray, which was done.

I do not believe her symptoms are due to gas-

tic polyp alone. We have had an occasional case where a pedunculated polyp moving downward with intake of food intermittently obstructs the pylorus. This x ray does not suggest that there is a pedunculated polyp. It is very freely movable and I should be surprised if her symptoms of distress, pain and vomiting are caused by the presence of the polyp alone.

The lesion was in the prepyloric zone definitely. It was just above the pylorus and there was a tumor of some sort that Dr. Benedict was able to see.

The description we have here of the gastroscopy suggests a rather diffuse gastric irritation which might be called gastritis and the presence of ulcer would fit in with that diagnosis perfectly well. A small tumor in the prepyloric area might be a thickening of one of the folds of the stomach. It is not very large, five millimeters. It is possible that it might represent nothing more than in a sense a rugous enlargement of one of the folds of mucous membrane. I take it she was not bleeding when examined under the gastroscope. I do not know how to interpret the absence of peristalsis. I should like to know what Dr. Benedict has to say about that. I should not expect much peristaltic activity anyway but the fact that he mentions it indicates that he considered it important. I would like to know whether the roentgenologist noted it. It may be there was a lack of peristalsis and it may mean a scirrhouss type of involvement of the wall of the stomach, with a local elevation of tissue—all due to scirrhouss carcinoma. Obviously a flat diagnosis from the facts we have at hand is in the nature of a guess. The only important issue is to decide that the patient should be explored, and this was done.

I do not believe that this is an ordinary adenocarcinoma. I should imagine this nodule in the prepyloric area was not prepyloric cancer in the sense of the usual lesion we see. If it is polyp, I do not think it is the cause of her symptoms. The symptoms should be explained on chronic gastritis. I should expect the surgeon would find chronic gastritis there with a polyp.

#### CLINICAL DISCUSSION

Dr. GEORGE W. HOLMES As Dr. Jones pointed out, there is no statement as to whether peristalsis passed over the involved region, and I agree with him that this would be an important point in diagnosis. Gastric stasis especially a large amount, is quite important because it indicates an obstructing lesion at the pylorus in the absence of any other explanation for stasis. If we look first at the larger films the lesion appears to be quite localized and to be confined to the area immediately before the pylorus possibly extending into the pyloric valve. The pyloric ring is a little wide and the opening is

displaced. It does not seem to be in the center of the antrum. Just below it, toward the greater curvature side of the stomach, we see a mottled appearance which is fairly constant. It does not vary from film to film. There is nothing in these films to lead us to suspect that the lesion extended any distance up the lesser curvature.

We have some small films that are interesting because with the stomach well filled, as you can see, the mottled appearance entirely disappears. They also show the concentric position of the pyloric ring. There must be some flexibility of the wall, otherwise it would not show mottling with compression. Here is another series showing disappearance of the mottling and a little better idea of the mucosa in the involved area. I do not think that is normal mucosa, but I do not see evidence of an ulcer crater.

Dr. WILLIAM B. BREED Would the location and growth of that rule out a lymphoma? That might hook up with the eosinophilia. That might be an indication of lymphoma, I should think.

Dr. HOLMES Lymphoma can occur in any part of the stomach but from the x ray this would be an unusual picture for lymphoma. The absence of any changes in the mucosal folds, and the fact that it is a single lesion are against lymphoma.

Dr. MALLORY Dr. Benedict, have you any thing to add?

Dr. EDWARD B. BENEDICT On gastroscopy the lesser curvature appeared irregular and somewhat indurated and no peristalsis was passing over this region, all of which suggested the possibility of an infiltrating type of carcinoma. There was a marked gastritis associated with the lesion.

Dr. EDWARD D. CHURCHILL I know the outcome of this case because I operated on her. I think it is surprising in going back over the evidence, that a correct diagnosis was made.

It is the story of gastritis except for the obstruction at the pylorus. I do not know why the pylorus appeared obstructed by x ray because the lesion found could not have caused obstruction. With evidence of a definite x ray lesion in the prepyloric region and Dr. Benedict's observation by gastroscopy to back us up a preoperative diagnosis of a prepyloric lesion, probably malignant, was made. Palpation of the stomach which was not dilated showed a small thickening one inch from the pyloric ring. The pyloric ring was normal, not involved in any scar tissue. The lesion felt like a small nodule, not much bigger than a finger nail, in the mucosa. There was no involvement of the serosa and no involvement of the muscular coats of the stomach. A pylrectomy with Billroth II anastomosis was performed.

## DR. CHESTER M JONES' DIAGNOSES

Chronic gastritis.  
Prepyloric ulcer  
Polyp of the stomach with ? of carcinoma

## PATHOLOGIC DIAGNOSES

Adenocarcinoma of the prepyloric area of the stomach  
Acute and chronic gastritis

## PATHOLOGIC DISCUSSION

**DR MALLORY** The crux of the diagnosis in this case certainly was the location of the lesion. In the specimen which was resected we could not entirely agree with either the gastroenterologist or the x-ray man as to the character of the local lesion. We found a quite definite ulcer, about seven millimeters in diameter, one edge of which, the one away from the pylorus, was very slightly polypoid. The projection was so slight, however, that in gross we questioned whether it might be just a bit of shaggy fibrin on the edge of the ulcer. The other margin of the ulcer was rather hard to make out, but it felt rather firm. None of us were willing grossly to commit ourselves to a diagnosis of carcinoma from the appearance of the lesion. When the sections came through we found an appearance similar to those of the two other very early prepyloric lesions which we have, where the character of the epithelium is markedly abnormal but in which we were never able to demonstrate any invasion. This case I think forms an important connecting link between those cases and the more usual frank prepyloric cancer, because at one point we were able to find definite microscopic invasion below the muscularis mucosa, so that here is a case showing the precancerous type of epithelial change throughout most of the lesion and definite early invasion in the remaining portion.

**DR CHURCHILL** There is some question about the specimen. When removed from operation it was handled quite a bit before it was sent over to you and although you say it was an ulcerated lesion it did not appear grossly as we would picture an ulcer. It looked to me more like a lesion of the lip, early squamous cell carcinoma of the lip, with elevation and firmness of the mucous membrane, but without much erosion.

**DR MALLORY** Perhaps I should have described it as an erosion rather than an ulcer. It was not so deep as an ulcer would be.

**DR CHURCHILL** I should say that grossly there was no inflammatory reaction.

**A PHYSICIAN** Did it in any place invade the muscular coats?

**DR MALLORY** It has not got down to the true muscles, but it is definitely below the muscularis mucosae.

**DR HOLMES** Can you explain at all the difference in location of the lesion as described by the surgeon and the radiologist? How far was it from the pylorus?

**DR MALLORY** It was very close to the ring. We measured it as two centimeters from the ring.

## CASE 21122

## PRESENTATION OF CASE

A seventy-nine year old Irish-American widower entered complaining of jaundice of three months' duration.

Four months before entry the patient was suddenly awakened at night with a severe pain and chill that "completely exhausted him by morning and shook the entire bed". He felt feverish the next morning and called his physician who told him that he had grippe and sent him to a hospital where he remained for about six weeks. While in the hospital he had two relapses accompanied by chills similar to the one that initiated his illness. Three months before entry while still in the hospital and during his second chill he noticed that his stools were white. A few days later he was jaundiced. His urine was tea colored at that time and has remained so since. He believed that his jaundice, which was accompanied by intense itching, had become less intense. At no time did he have pain, nausea, vomiting or indigestion. Three weeks before entry he developed a cold and a severe cough producing a thick, ropy, foul-smelling material. Because of this cough he postponed his admission to this hospital. His appetite, which had been good, had become very poor since the onset of his illness. He had lost about twenty pounds in weight, weighing at the time of entry approximately 170 pounds.

His father died at the age of seventy-eight from "mine fever". His mother died at the age of seventy-two of tuberculosis. One brother died at the age of thirty-three of tuberculosis and another at sixty-five of pneumonia. One sister died at the age of seventy-six of cancer of the breast. His wife died forty-seven years ago of cancer of the stomach.

Fourteen years before entry he was in a hospital for five weeks with "myocarditis after a breakdown". He had slight edema of the ankles in the evening. He had always been very active and at the time of entry still felt pretty strong.

Physical examination showed a well-developed, slightly obese, markedly jaundiced man. There were a few dilated venules on the trunk and a few veins on the lower abdomen. The sclerae were intensely jaundiced. His teeth were absent. The lungs were clear. The heart showed a rough, musical, systolic murmur over the en-

tire precordium, heard loudest at the second right intercostal space. The blood pressure was 140/84. The right half of the abdomen felt somewhat full and was slightly dull. In this region there was a firm mass which moved with inspiration and which was slightly tender. The edge of the mass could not be felt. The spleen was not felt. The prostate was slightly enlarged, smooth and firm. There was some pitting edema of both legs.

The temperature was 99.2°, the pulse 94. The respirations were 22.

The urine was dark amber to green in color, had a specific gravity of 1.018 to 1.022, a green to orange test for sugar and a positive bile test. (He was given daily intravenous glucose.) The sediment showed an occasional white blood and epithelial cell but no red blood cells. Examination of the blood showed a red cell count of 3,370,000, with a hemoglobin of 70 per cent. The white cell count was 11,000. 82 per cent poly morphonuclears. The stools were soft, formed, and gray in color. A guaiac test was negative. A Hinton test was negative. The nonprotein nitrogen of the blood was 25 milligrams. The serum protein was 5.8 per cent and the serum chloride 102 cubic centimeters N/10 Cl per 100 cubic centimeters. The blood sugar was 72. The bleeding time was seven minutes, the clotting time six minutes. A liver function test showed 100 per cent retention. The van den Bergh test was 28.12 direct.

A gastro-intestinal series showed a hernia of the stomach and a diverticulum of the duodenal loop in the region of the gall bladder. A chest film showed no enlargement of the heart although the aorta appeared to be dilated.

On the third day the temperature began to rise, reaching 102° on the fourth day and 103° on the fifth. His sputum increased in amount and was often bloody. Generalized rales developed throughout the chest. He rapidly failed and died nine days after entry.

#### DIFFERENTIAL DIAGNOSIS

DR. RICHARD H. SWEET. We have then a seventy nine year old man with obstructive jaundice of four months' duration. The onset was sudden with pain and evidences of infection, chills and fever. Recurrences of the chills and fever remind one somewhat of Charcot's syndrome suggesting a biliary tract infection. After reading that the onset was with pain, it is confusing to read later that "at no time did he have pain, nausea, vomiting or indigestion." Presumably there was but one attack of pain. We note a considerable loss in weight, twenty pounds.

Our conclusion from the history of the present illness is that there is an obstructive jaundice

with persistent absence of bile in the stools and that there is probably an associated biliary tract infection as manifested by the chills and fever.

We discover from the examination that there is a mass in the right upper quadrant of the abdomen, but its size and shape are not defined. There is marked jaundice and from the laboratory examinations we gain confirmation of the fact that the jaundice is the obstructive type. A positive guaiac in the stool is by no means rare in deeply jaundiced patients without any definite lesion in the gastro-intestinal tract.

His course in the hospital would suggest that he died of a terminal pneumonia.

Granted that we are dealing here with obstructive jaundice, it is not so easy to predict its cause from the rather conflicting evidence at hand. If we assume that there was pain, especially with the chills and fever, we might postulate the presence of a stone in the common duct. On the other hand if we accept the contradictory statement that he had no pain, remembering also the palpable mass in the right upper quadrant and the loss of weight and appetite, we cannot deny the possibility of malignant disease. If the mass were only described a little more completely, it would aid us materially because if it is the gall bladder the proper assumption would be that there is a carcinoma of the pancreas obstructing the common duct. If on the other hand the mass turns out to be the liver we might be dealing with a malignant obstruction of the hepatic ducts above the cystic duct. To approach any nearer than this to the making of a definite diagnosis on the basis of the evidence as given in this record is perhaps foolish but if asked to give a definite opinion as to the diagnosis in this case I would guess that there is a carcinoma of the pancreas obstructing the common duct.

#### CLINICAL DIAGNOSES

Obstructive jaundice, † carcinoma of the head of pancreas, † common duct stone  
Arteriosclerosis.  
Secondary anemia.  
Bronchitis.  
Bronchopneumonia

#### DR. RICHARD H. SWEET'S DIAGNOSIS

Carcinoma of the pancreas obstructing the common duct

#### ANATOMIC DIAGNOSIS

Adenocarcinoma of the common bile duct  
Obstructive jaundice.  
Central necrosis of the liver  
Acute cholangitis, slight.  
Arteriosclerosis.  
Bronchopneumonia.

## PATHOLOGIC DISCUSSION

DR TRACY B MALLORY Dr Sweet's comments on the inadequacy of the description of the abdominal mass are entirely justified and it is always a little unfair to ask a surgeon to commit himself on the basis of a medical man's examination of the abdomen. The mass which was felt was undoubtedly the liver which, even at autopsy, projected three centimeters below the costal border. The gall bladder was not enlarged and contained perfectly clear, colorless, watery fluid. Just at the junction of the cystic duct with the common bile duct a small tumor one centimeter in length was found which almost completely obstructed the common duct and the orifice of the cystic. Beneath the tumor in the duct wall a small nodule 1.5 centimeters in diameter was found in the gastrohepatic ligament. There were no metastases.

There is always some question how a case of this type should be handled. If the obstruction is in the pancreas or in the ampulla a palliative anastomosis is often possible and sometimes produces astonishingly favorable results for months or even years. Moreover, stone can never be certainly excluded no matter how typical the

story may be for cancer. A cancer high up in the common duct, however, like this one, is so strategically located that it can kill at an earlier stage than cancer anywhere else in the body and even palliative measures are out of the question.

Moreover, the operative mortality in this group of cases is extremely high even when nothing beyond an exploration is attempted. As far as postmortem examinations throw any light upon this it seems to me that the extent of secondary liver damage probably controls the prognosis. Complete obstructive jaundice—whether or not complicated by cholangitis—regularly produces in the course of weeks extensive degeneration of the liver, and such cases tolerate anesthesia and operation very badly.

This patient was in such poor condition on entry that it was felt unwise to attempt surgery unless his general condition could be distinctly improved by medical treatment. In spite of appropriate therapy he went steadily and rapidly downhill. At postmortem, slight cholangitis and very marked and extensive central necrosis of the liver lobules suggested that the decision not to attempt operation was a wise one.

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## QUALITY IN EDUCATION

It is interesting and perhaps significant that just now there should be increasing emphasis on quality in education as distinguished from quantity. At a recent meeting of college representatives held in Atlanta there was expressed a strong sentiment that the standardization process had not accomplished the main objective of education. What is more important is that such expression was sympathetically received. More recently in Chicago at the meeting of the Council on Medical Education and Hospitals, the American Medical Association and the Federation of State Boards of Registration, a proposal to deal with the problem of overproduction in the professions by emphasizing the quality of the product was received with considerable enthusiasm. It is a group not given to enthusiasm.

The movement is not new. The idea is back of individualization in education whenever it has appeared. The unit in education is the student, not the course. We have witnessed a period of expansion in education, to be succeeded as Mat-

thew Arnold said, by a period of concentration. The ideals of the two periods are not identical but neither can entirely obliterate the other, perhaps the beginning of the epoch of concentration is upon us.

There are cautious experiments in the colleges, in admitting some candidates who do not meet the formal standards generally adopted, but who have impressed some evaluators as being candidates of promise. The method, the evaluators and the candidates are all on trial.

The feeling is growing that the teaching in educational institutions should be more informal than in the past. The aim, the goal, the end should be formulated as clearly as possible for each institution, and the question should be, not how long a time do you spend, not what is the content of the curriculum, not what are the methods employed, but how successful are you in reaching your goal? It is not that the early questions are to be utterly forgotten, they are not irrelevant in a certain sense the method determines the result. But the major interest lies in the quality of the product, and it is in the light of the product, that method and content of curriculum, and arrangement of work in orderly sequence, are to be evaluated. In themselves they are nothing.

The re-survey of medical schools which is now in the making will of necessity evaluate the institutions by formal standards. Their informal attainments cannot be determined easily. There is no reason to think that finality has now been more nearly reached in medical education than elsewhere. There are enough schools, enough students, enough physicians, all reckoned grossly. What is needed is better schools, better students, better physicians, directed to the ever receding goal of better care for the sick, better care for the well. It is to be hoped that quality rather than quantity will quite generally be accorded first place.

## SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM

Surgery of the sympathetic nervous system is of recent origin. Not more than ten years have passed since this, one of the last systems of the body to be attacked by surgical methods, first came into prominence as the result of the unusual publicity given to the work of N. D. Royle and his coworkers on sympathetic ramification for the treatment of spastic paralysis. In spite of the fact that this operation was not based on sound physiological grounds and that, in general, it has not been accepted by the medical world the secondary influences which came from this work have been most important. Royle's investigations led other workers to similar operations, for a widespread group of conditions on various parts of the sympathetic

nervous system. Of those diseases treated by surgical methods the best results have been obtained in the functional disturbances of the blood vessels, such as Raynaud's disease, thromboangiitis obliterans and intermittent claudication. The secret of the success of operations for the above conditions appears to be the result of the temperature changes associated with dilatation of the blood vessels and the abolition of vasomotor spasm with consequent relief of pain. Other diseases relieved with a moderate degree of success, although sometimes with extraordinarily good results, are angina pectoris, chronic arthritis, and diseases of the pelvic organs, particularly those connected with the lower colon, such as Hirschsprung's disease and bladder dysfunction.

In addition to the treatment of disease by surgical methods, a movement for investigating the form and function of the sympathetic nervous system has been greatly accelerated. We are now in a position to clearly visualize the anatomy of the system and, in part, to understand its physiology. We are still, however, unable to identify the pathological conditions, except in one or two instances. Naturally, the intensive work done in the last ten years on this subject has been reported widely in medical journals. Recently, moreover, a number of monographs have appeared, not the least important of which is that issued, this year, by Livingston.\*

The author has compressed into a book of two hundred and fifty pages a remarkable amount of information about what he rightfully terms "the visceral nervous system", fifty pages give a brief but adequate review of the anatomy and physiology, a slightly longer section is concerned with the clinical conditions, and finally, a third part deals with the actual surgical procedures, particularly the surgical technique. The book, however, is not designed entirely for the surgeon, it should be most useful to all internists and neurologists. This personal monograph, the result of the observation of over three hundred cases by the author, augmented by his wide knowledge of the literature and the advances by other investigators, is, as the publisher so modestly states on the dust-cover, "a comprehensive and well organized monograph". The subject is of great interest to practically every physician, for the sympathetic nervous system is widespread and concerns functions which are related to all of the medical specialties. Although Livingston has written a book based largely on his own experiences, his work should have a wide appeal, for he has not by any means taken a narrow point of view. Thoroughness and conservatism are the two outstanding characteristics of the author's work.

\*Livingston, W. K. *The Clinical Aspects of Visceral Neurology With Special Reference to the Surgery of the Sympathetic Nervous System*. Charles C Thomas Springfield Ill & Baltimore Md. 1935 xi + 254 pages.

## AUTOMOBILE ACCIDENT INSURANCE FRAUDS

FOR some time there has been carried on as thorough as possible an investigation of the alleged automobile accident insurance frauds, by the Massachusetts Claim Investigation of which Frederick W Mansfield, now His Honor, Mayor of Boston, was formerly chairman. The number of such cases ran into the thousands and there is the possibility of involvement of the following the driver of the car, the claimant, the physician who first saw the claimant, the lawyer for the claimant, the physician for the insurance company, and the adjuster. It has been found that usually the conspiracy to defraud involves only the claimant, his physician and his lawyer.

The medical profession is interested in its transgressing members rather than in the claimants and the lawyers. The number of transgressing physicians is not large, relative to the number of physicians in the state and to the number of cases, but the frequent association of certain physicians with fraudulent claims suggests a habit-forming element not hitherto suspected. The amount of money involved for the physician is so small, in some individual cases, that one wonders at this deceit and petty thievery, in the aggregate it may be large. The habitual claimant may, under various aliases, have had a score or more of alleged accidents, netting him a hundred dollars or more per claim. Of course the lawyer gets his share.

It is conceivable that an honest physician may be an innocent accessory, but it is a little difficult to see just how this would happen if he were really honest and made and kept immediate, accurate and adequate records. The resources of the crooked physician are well known and need not be described.

It is to be noted that the physician is a *sine qua non*, an indispensable factor, in this conspiracy, for except after medical examination, the insurance company pays no claim. Since the medical profession holds this key position it should not be indifferent to what some of its members are doing. The State, through the Board of Registration in Medicine, may take statutory action, and this may prove to be all that is necessary, but it behooves the medical profession to take cognizance of this abuse which is hurting its good name.

## THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

QUINBY, WILLIAM C. B.A., M.D. Harvard University Medical School 1902 F.A.C.S. Clinical Professor of Genito-Urinary Surgery, Harvard University Medical School Urological Sur-

geon, Peter Bent Brigham Hospital, Boston, Mass. His subject is "Indications for and Results of Total Cystectomy for Cancer of the Bladder." Page 501. Address: Peter Bent Brigham Hospital, Boston, Mass.

HEPBURN, THOMAS N. A.B., A.M., M.D. Johns Hopkins University School of Medicine 1902. F.A.C.S. Urologist, Hartford Hospital, Consulting Urological Surgeon, New Britain General Hospital, New Britain Conn., Rockville General Hospital, Rockville, Charlotte Hungerford Hospital, Torrington, Manchester General Hospital, Manchester, Meriden General Hospital, Meriden, and Bristol Hospital, Bristol. His subject is "Urterorectal Anastomosis." Page 503 Address 179 Allyn Street, Hartford, Conn.

DEROW, HARRY A. M.B., M.D. Boston University School of Medicine 1927 Assistant Physician, Beth Israel Hospital Instructor in Medicine, Harvard Medical School. His subject is "Significance of Postoperative Rises of Blood Nonprotein Nitrogen." Page 509 Address 475 Commonwealth Avenue, Boston, Mass.

STONE, ERIC S.B., M.D. Harvard University Medical School 1918 F.A.C.S. Assistant Surgeon, Gynecological Service, Rhode Island Hospital Attending Physician, Rhode Island Birth Control Clinic. Consulting Urologist, Providence Lying In Hospital Surgeon in Charge, Urological Service, Charles V Chapin Hospital. His subject is "Contraception as a Possible Means of Reducing Gynecological Morbidity" Page 511. Address 199 Thayer Street, Providence, Rhode Island.

### The Massachusetts Medical Society

#### ANNUAL MEETING OF THE SECTION OF OBSTETRICS AND GYNECOLOGY, JUNE 3, 1935

"MATERNAL mortality and morbidity in this country has long been viewed with concern. Medical journals constantly make reference to the subject, while the lay press has given it a prominence never before accorded to any medical question. This is not surprising as no health problem can be of greater consequence to a nation than maternal and infant welfare. From either the humanitarian or the utilitarian stand point it is of supreme importance to ensure to the expectant mother safe conduct through pregnancy and labor as far as is humanly possible." The above quotation is from the book, "Maternal Mortality and Morbidity", by Professor J. M. Munro Kerr. At the June meeting the Fellows will have an opportunity to hear an im-

partial discussion by Dr Charles E. Mongan. His paper is entitled "Maternal Mortality: A Demand for Fairness."

Disease of the cervix is the cause of more discomfort than any other gynecologic condition. The correct diagnosis and proper treatment gives not only relief to the patient but may prevent a cancer death. The Section is fortunate in having Dr Carl Henry Davis of Milwaukee, Wisconsin, speak on the subject of "Diagnosis and Treatment of Lesions of the Cervix Uteri". Dr Davis is Clinical Professor and Director of the Department of Obstetrics and Gynecology, Marquette University School of Medicine.

The relief of symptoms by surgery performed on the autonomic system has opened up a fascinating field of much promise. In gynecological practice, sympathectomy of the superior hypogastric plexus (presacral nerve) for pelvic pains due to various causes has come to occupy an established place. In properly selected cases it offers relief without sacrifice of the ovaries or uterus. Dr Frank Pemberton will discuss this in his paper entitled "Presacral Neurectomy".

### THE HAZARDS OF PUBLICITY

#### A COMMUNICATION FROM THE COMMITTEE ON PUBLIC HEALTH

The older and accepted ethics of the medical profession forbade the deliberate entrance of physicians into public advertising. While there have always been a few individuals, like Paracelsus, who have disregarded this rule of behavior, and there have also been those whose work has unconsciously drawn them into public exhibition, the old taboo dealt effectively and satisfactorily with human nature for centuries. For this reason alone it should not be modified without serious thought. The purpose of this article is to discuss the present position of the medical profession on this subject.

In recent years it has become particularly difficult to maintain anything of a traditional nature. It has been pointed out that to conform with our changing social and economic life the medical profession should become more articulate in its relation to the public. It is generally believed that this suggestion came from the business world but it was really Mrs. Eddy who invented corporation publicity and devised the methods to make it work. She had a "Committee on Publication" in each state of the Union and in all some fifty functioning publicity men scattered throughout the country. As big business took up the art it was called advertising, during the war it became propaganda, since the war it has become education. Now we term it public health education and it is beginning to be sponsored (i.e., paid for) with the official endorsements of so-

cieties, associations, colleges and academies Call it by any name you will, ascribe it to any motive, high or low, sponsor it by whomsoever you wish—it is the same thing in the eyes of the world. Publicity has established religions, won and lost wars, sold automobiles, and brought people to the doctors for periodic health examinations. It has many varieties and mediums, some of which may now be considered.

First, there is the publicity which is sometimes the unavoidable accompaniment of the "human interest" story, which, in the absence of political and criminal copy, occupies the front page of the daily press. These stories are generally harmless and can be readily understood. The press insists upon its "Freedom"—one element of which is apparently the freedom to make its copy entertaining. A good story needs no further justification, let the chips fall where they may. This has always been so and probably always will be, but on the whole the newspapers have the good taste to recognize our disinclination to be drawn into such affairs. The press also shows discrimination in its acceptance of advertising copy, and we should look upon it as a matured institution, operated on the whole for the good of the community.

The radio, on the other hand, is immature in its taste and judgment. Its relative novelty has somewhat blinded us to this fact, but anyone who listens to the claims of the makers of Pepsodent antiseptic, Sprudel salts or Fleischmann's yeast (to mention only a few of them) can hardly be impressed with our own broadcasts on the same subjects—if indeed they ever hear them. When we go on the air we are in fast company. We lack their glib delivery, we lack their sense of humor, we lack their talent for entertainment, and we cannot afford to pay their prices.

The medical broadcasts of the State Department of Public Health and those written by the Fellows of the Massachusetts Medical Society during the past four years are admirable presentations. Their authors have spent many hours preparing them. Considered alone they are good medical publicity. They cannot be considered alone, however, for they are but a small part of the publicity to which our citizens are exposed. If experimental facts indicate that Vitamine A may be a factor in resistance of rats to infection, the next day you can buy a generous portion in a nickel's worth of cough drops. If we present the problem of rickets prevention, every food on the market appears as its vehicle. When we suggest that people should avoid exposure to colds, we find them gargling half a dozen flavored solutions, because they are told through the same publicity mediums that this is the way to avoid colds. Perhaps the worst hallucination we ever sanctioned was the hygienic idea that the bowels should move every day. If we can't be specific

somebody else can, so we bait the hooks and they catch the fish. To be familiar with what the medical profession is talking about is to hear and understand but one feeble voice in the babel of them all. From this larger point of view we do not and cannot make our own motives and ideas clear to our citizens. We are misquoted in the press and on the air a thousand times a day, and we don't even know when and where it happens.

All this is harmless gaiety when compared to other results of publicizing medical progress. It is surprising to think that the public can be told that the paralysis of poliomyelitis can be prevented by convalescent serum, or that measles can be ameliorated by placental extract, before there is any evidence that these things are so. It is also noteworthy that such pronouncements usually proceed from hospitals, universities, departments, and societies. These are the organized groups who are dabbling with publicity and who are mainly responsible for the untimely statements that will surely undermine the public's confidence, not only in them, but in us as individuals. They do not do it intentionally, they would like to go so far and no farther, they would like to confine themselves to established facts, but this great force, Publicity, cannot be tamed. If it cannot use its imagination, dramatize, and overstate extravagantly, it ceases to function at all. Inasmuch as such immoderate habits are not compatible with either the science or the practice of medicine, it is a question whether we should pause in our rapid modification of the old-fashioned ethical standards.

Reference should also be made to our own professional publicity men. On the whole they are individuals who are honestly striving to carry the good word. They are anxious not to overstate their subjects. We know them and respect them as they do us. In trying to decrease "the gap between what we know and what we do", they fail to appreciate the complexity of what we know and the difficulties which surround our daily doing. They tend to acquire a peculiar characteristic for which there is no word in the English language. It is frequently found in professors, lecturers and teachers. None appreciate more than they the greatness of Edward Jenner, but they fail to appreciate the most remarkable thing about his greatness that he said once and for all practically everything that ever needs to be said about the prevention of smallpox. Had he lived today he could not have done it, and he could not have done it when he did if he had been obligated to make a contribution to the progress of science every year or two. Jenner's Inquiry is, more than anything else, a monument to being *left alone* for a quarter of a century. Such monuments are not common. Theophile Laennec did a similar thing for auscultation in

De l'Auscultation Médiate in 1819, and Alfred Worcester did it for appendicitis in 1892. Worcester is probably the only man still living who has done this rare thing—in fact he said every thing that ever need be said about appendicitis in one hundred and one words. (Summary: The Treatment of Appendicitis, Am. Gynaec. and Paediat., 1891-1892, p 449.) The circumstances under which these phenomena occur might be worth careful analysis and our universities, hospitals, departments, colleges and academies might contribute more if they only contributed less.

What chance have the obstetricians of being left alone to work out the problems of parturient hypnosis! Their patients often employ them on their resourcefulness in answering the idiotic question "Are you one of the doctors who believe that women having children should be made to suffer?" This is largely the result of periodical publicity in which liberal minded hackwriters try to confuse our clinical reasoning with their own emotional philosophy. It is one of the many problems in the solution of which the individual presents the unknown factor. Standardization is impossible because individual people cannot be standardized. These are problems on which we ourselves cannot agree, and the popular airing of our controversies may not be the best way to hasten their solutions.

Some able physicians in eastern Massachusetts are now reluctant to make the diagnoses of anemia, diabetes, thyroid disease and heart disease. Many of the patients whom they so label return not to them, but to one of the now well known Meccas for the treatment of these conditions. These Meccas enjoy our respect and gratitude, and we are generally glad to refer our problems to them—but the patient's interests will not be so well served if he is referred to them by his laundryman or cook.

This communication is not intended to be petulant or destructive. It is disquietant only. The medical profession is now dragging the anchor which has held it for centuries. In the interest of public health we should take "a look to windward" but we are in the storm and we've got to ride it out. We cannot hope for any sudden change.

But just suppose the authors of our ethical codes had given us a tradition of anonymity in our medical publications. Stranger elements of indirection still thrive in the legal profession. Or just suppose each medical author assumed a nom de plume, that we were to read of "600 Tonsillectomies by Boz", or "Launcelot's Treatment of Sporotrichosis." We would of course know and admire Boz and Launcelot—and they would remain in the telephone directories as they are to-day, Drs. John Doe and Richard Roe—just supposing.

## SECTION OF OBSTETRICS AND GYNECOLOGY\*

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*Secretary*

524 Commonwealth Avenue,  
Boston, Mass

### TREATMENT FOR PYELITIS COMPLICATING PREGNANCY

We do not feel that the treatment of this condition in the great majority of cases is essentially different from that of simple pyelitis. Our routine method of treatment consists of the following:

1. The patient is put on a régime of absolute bed rest, bland diet, large quantities of fluids, and sedation. The latter may consist of hot fomentations to the kidney region, or of drugs such as phenobarbital, hyoscyanus, or pyramidon, singly or in combination. The urine is kept alkaline by giving sodium bicarbonate, gr 20-30 every four hours. The patient is kept on this régime for as long as she continues to show improvement.

2. If the patient does not respond well to the above, or if she improves to a certain degree, but then shows no further progress, we resort to the use of one of the various urinary antiseptics, usually urotropin, given with sufficient acid sodium phosphate or ammonium chloride and acid ammonium phosphate, to render the urine constantly acid. It has been our experience that if urotropin is unsatisfactory in its effect other urinary antiseptics are likewise ineffectual. This applies to methylene blue, acriflavine, hexylresorcinol, salol, and others.

3. In a small series of cases which did not respond satisfactorily after the above methods had been given a thorough trial, we have obtained excellent results from placing the patient on a ketogenic diet. Space does not permit giving a detailed account of this; the essential feature is that the diet be low in protein and carbohydrate and high in fat. Barborka's tables provide a simple method for its calculation. This method is not rapid, and several weeks may be required before the urine becomes sterile, but we feel that it is very well worth trying before resorting to more radical treatment, and we have found it very successful in cases where more time-honored methods of therapy were not successful.

4. Catheterization of the renal pelvis, either to provide drainage or for lavage with silver ni-

\* A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

trate or other external antiseptic, we believe should be referred to the urologist for such special treatment

## MASSACHUSETTS LEGISLATIVE NOTES

**S 52** Petition of Charles G Miles that security be provided to hospitals and physicians in the enforcement of reasonable charges for treatment of certain personal injury cases

Reported in new draft, H 1898

**RESOLVE** providing for an investigation by the judicial council as to providing a lien to secure charges of hospitals, physicians and nurses for services rendered in motor vehicle accident cases

**RESOLVED**, That the judicial council be requested to investigate the subject matter of current senate documents numbered fifty-two, one hundred and twenty four, and current house documents numbered four hundred and forty-seven, five hundred and eleven, eleven hundred and five, eleven hundred and nine, twelve hundred and sixty seven and sixteen hundred and fifteen, so far as they relate to providing a lien to secure charges of hospitals, physicians and nurses for services rendered in motor vehicle accident cases, and to include its conclusions and recommendations in relation thereto, with drafts of such legislation as may be necessary to give effect to the same, in its annual report for the current year

**H 1400** Reported in new draft, H 1894

**RESOLVE** providing for an investigation and study by a special commission relative to the establishment and maintenance of a system of health insurance

**RESOLVED**, That a special unpaid commission consisting of two members of the senate to be designated by the president thereof, five members of the house of representatives to be designated by the speaker thereof, and four persons to be appointed by the governor, with advice and consent of the council, is hereby established for the purpose of making an investigation and study of the subject matter of current house document numbered fourteen hundred, relative to the establishment and administration of a system of health insurance. Said commission shall report to the general court the results of its investigations and study, and its recommendations, if any, together with drafts of legislation necessary to carry its recommendations into effect, by filing the same with the clerk of the house of representatives on or before December first in the current year. For the purposes of this resolve said commission may expend such sums, not exceeding (blank) dollars, as may hereafter be appropriated

Referred to rules

**H 528** Petition of Annie D Brown for legislation to provide for regulating the practice of physicians and surgeons in certain cases

Report, leave to withdraw Accepted in Senate (Final.)

## MISCELLANY

### MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

#### DIVISION OF ADULT HYGIENE

**Number 23** *Cancer Clinic Bulletin* March 1, 1935

The following is a paper prepared by the Massachusetts representative of the American Society for the Control of Cancer

The American Society for the Control of Cancer was founded in May, 1913, and incorporated under the laws of New York in 1922, in order that it might hold money and receive gifts and grants. Its formation was inspired by a committee appointed by the American Gynecological Society

Its objects are best set forth in the certificate of incorporation which quoted verbatim are as follows

"The particular objects for which the corporation is to be formed are as follows To collect, collate and disseminate information concerning the symptoms, diagnosis, treatment and prevention of cancer, to investigate the conditions under which cancer is found and to compile statistics in regard thereto"

The death rate from cancer has slowly increased in the registration area of the United States and throughout the world, due allowance being made for the fact that more people reach the cancer age than formerly, and that by modern diagnostic methods the disease is recognized more frequently. At the present time there are about 125,000 deaths from cancer yearly, in the United States

Previous to the foundation of the Society some educational work has been undertaken by the American Medical Association in 1905 and the Clinical Congress of Surgeons in 1913, which appointed a committee later instrumental in the publication of many articles on cancer in popular magazines. To anyone interested in the Society I can do no better than refer them to the pamphlet on "The Objects and Methods of the American Society for the Control of Cancer"

#### ORGANIZATION

Dr Charles A Powers of Denver was the first President. At present the officers are as follows

Dr James Ewing, Chairman, Board of Directors

Dr Burton T Simpson, President

Dr Henry K. Pancoast, Vice-President

Dr Calvert Brewer, Treasurer

C C Little, Sc D, Managing Director

The Society is governed by an Executive Committee of twenty, and an Advisory Council of one hundred. The headquarters are at 1250 Sixth Avenue, New York City. It maintains several field representatives, but is represented chiefly by Regional or State Committees, the chairmen being appointed by the central office. The Regional Chairman forms his own committee. The whole organization is in

skeleton form which can be enlarged if any active campaign is undertaken.

#### FINANCES

When the Society was first organized \$1000 was guaranteed by each of five individuals but sufficient money was raised by private subscription and the guarantors were not called upon. Memberships were solicited at \$5.00 a year and a membership list of two thousand was built up in New York and in the neighborhood of Boston. The membership has fallen off considerably in recent years and Massachusetts is now represented by only seventy-eight members. In Denmark with approximately the same population as Massachusetts seventy thousand belong to the cancer control society. In the beginning contributions from the various parts of the country were divided between the local committee and the main office but at the present time 80 per cent of the money raised by subscription is returned to the local state committee. The Society received grants in former years from the Commonwealth Fund and the Carnegie Foundation. At present the income is derived from the Lasker Memorial Fund of \$75,000 as well as the Endowment Fund, the Cleveland Fund and a reserve fund. Most of the expenses of the Society are clerical for travelling or for printing pamphlets, posters and other publications for distribution to the local branches at cost, and in the making and distribution of films.

#### WORK OF THE SOCIETY

According to our ideas at the present time, cancer at its inception is purely a local disease and if recognized early and promptly destroyed the percentage of cures should be high. Unfortunately it is practically symptomless until the growth has attained a considerable size and is often disseminated when first seen. The term 'Cancer' is a broad one the disease varying greatly in different parts of the body both in regard to the rapidity of the growth and the tendency to dissemination. About 60 per cent, however, may be said to be visible and should be recognized early. The Society believes that any advice given should be helpful and encouraging and that no attempt should be made to frighten the public. It has adopted the slogan 'In Early Treatment Lies the Hope of Cura.'

The educational work may be divided roughly into (1) The education of the public to consult a physician for any suspicious tumor or symptom, and what symptom to look for (2) The education of the physician to recognize the disease or a condition which might lead to cancer and advise appropriate treatment. He should realize that all cases are not hopeless (3) The education of the surgeon to perform a suitable operation. I speak of the surgeon, for at the present time in surgery lies the hope of cure, in the majority of cases, although treatment by radiation is to be recommended in certain forms.

Considerable statistical work has been done to determine the duration of cancer before proper

treatment is instituted. In an analysis of five hundred and seventeen cases of cancer admitted to the Massachusetts General Hospital in the years 1917-18 in only 44 per cent was there any possibility of permanent cure. Taking cancer of the breast as an example it was found that the average duration of the disease was twelve months before the patient was admitted to the hospital. The reason for this is hard to explain but in this particular group the fault was on the part of the patient in 90 per cent of the cases and not of the first physician consulted. A similar survey was made at the same institution ten years later and some slight improvement was noted. The mean duration of the cases in which the axillary glands were not involved was three months and the percentage of five year cures 75 per cent. The mean duration in the cases in which the axillary gland showed involvement was nine months and the percentage of five year surgical cures 25 per cent.

It is a regrettable fact that certain physicians either do not know or do not appreciate the early signs of cancer and are inclined not to advise treatment until the diagnosis is well established. The older textbooks are, undoubtedly partly responsible for this, for they give as the symptoms of cancer those of the advanced disease and do not stress the point that early malignant disease has no subjective symptoms. It is also a fact that if all cases of cancer in the country were divided equally between physicians in actual practice no one man would see more than two cases in the course of a year.

I regret to say that it is necessary to teach certain surgeons to perform adequate operations in the early cases and not to attempt the impossible when the disease is advanced. Unfortunately the public always hears of the fatal case and rarely hears of the successful one.

#### METHODS

Information in regard to cancer is given to the public by all known methods pamphlets, newspaper articles, posters, moving pictures, radio talks and public and scientific lectures. The central office furnishes pamphlets at cost to all local committees for distribution.

The Society in this State since its active participation in the National Cancer Week in 1931 and 1932 has maintained a skeleton organization only and has confined its activities to aiding the cancer program of the State Department of Public Health in every possible way. The Department has organized the State and with the aid of the Massachusetts Medical Society is carrying on the educational work of the public in cancer. It is also aiding the physicians and surgeons. There are now eleven State-aided Diagnostic Cancer Clinics staffed by the local physicians in the various localities throughout the State, as well as the State Hospital at Ponferrada and the free Pathological Diagnostic Service. There are also six other private cancer clinics in the city of Boston. The cancer bulletin published by the Department monthly is sent to physicians requesting

it, as well as other literature. The public is reached by radio talks given practically monthly and other addresses on the subject given before all types of social clubs and organizations, schools, nurses and other groups.

It is difficult to say what has been accomplished, but the general impression obtained at the clinics and hospitals is that more patients are seen in the early stages of the disease than was formerly the case. The results have been shown graphically in charts prepared recently by the Department of Public Health. These charts show that the death rate from cancer in women increased steadily from 1902, reaching a peak in 1931, and that since that date there has been a slight but definite falling-off. In men the death rate is increasing, but since 1931 at a much slower rate than was formerly the case.

Although the Massachusetts Branch of the American Society for the Control of Cancer is relatively inactive and devotes its energies to furthering the activities of the Department of Public Health, it still seeks members and needs funds to carry on the work. Any physician or person suffering from the disease or friends of patients so afflicted who are interested are urged to join the Society. The membership dues are \$5.00 a year, of which \$4.00 may be used by the local committee. Each member receives the monthly bulletin which contains articles and editorials on cancer and comments on allied subjects.

Application for membership should be sent to Dr C. C. Little, Managing Director, American Society for the Control of Cancer, 1250 Sixth Avenue, New York City.

#### SCHOLARSHIPS FOR MEDICAL STUDENTS

Announcement has been made of the award of thirty three medical scholarships from the Garcelon and Merritt fund, by Professor Manton Copeland of Bowdoin College. Of these, seven students at Harvard, nine at Tufts, and three at Boston University, have received aids.

#### SIGHT-SAVING CLASSES

Courses for the training of teachers and supervisors of sight saving classes will be offered at the 1935 summer sessions of

Western Reserve University, Cleveland, Ohio—June 24 to August 2

State Teachers College, Buffalo, New York—July 1 to August 9

Teachers College, Columbia University, New York City—July 8 to August 16

Details regarding the courses may be obtained from the university or college offering the course, or from the directors in charge of the courses, respectively.

Olive S. Peck, Supervisor of Sight Saving Classes of Northern Ohio, Board of Education, Cleveland, Ohio

Marie M. Carter, Supervisor of Sight Saving

Classes, State Education Department, Albany, New York.

Winifred Hathaway, Associate Director, National Society for the Prevention of Blindness, 50 West 50th Street, New York City.

#### CORRESPONDENCE

#### THE PROBLEM OF THE MEDICAL PROFESSION AND THE LAW RELATING TO NARCOTIC DRUGS

American Medical Editors' and Authors' Association  
Office of the Director General  
4 East 66th Street  
New York City

Editor, *New England Journal of Medicine*,

There are seven hundred and fifty thousand pounds of opium imported into the United States annually. Ten thousand pounds are used legitimately. Seven hundred and forty thousand pounds are bootlegged at from one to three dollars a grain—a bootlegging business of four billions of dollars annually.

In Los Angeles a Narcotic Clinic was started to treat pathological addicts. Dr. Edward Huntington Williams, Editor, Author and authority on neuropathology and drug addiction, was put in charge. The clinic and those in charge were endorsed and approved by the Los Angeles County Medical Society and the City and County Health Departments. While the existence of such a clinic would have meant the relief of hundreds of sufferers, it would have been a tremendous blow to the four billion dollar bootlegging narcotic industry. The clinic has been compelled to close its doors—those in charge have been arrested, thrown into jail and are being tried on criminal charges. The *Bulletin of the Los Angeles County Medical Society* has felt compelled to advise physicians not to prescribe morphine for any addict, even though he is suffering from cancer or any other pathological disease.

I have no proof that the bootleggers of narcotics are the cause of the bitterness and virulence of the prosecution of this worthwhile clinic. I can only ask that you as an Editor of a reputable Medical Journal, whether or not you are a member of the American Medical Editors' and Authors' Association stand by the profession in Los Angeles editorially and to do everything you can to influence the lay press to back up and vindicate those who are endeavoring to care for pathological addicts in Los Angeles.

If the profession in Los Angeles lose this case the physician and the public may read the handwriting on the wall as to their rights, should state medicine supplant practice as it is to-day.

H. LYONS HUNT, M.D.

EDITORIAL NOTE. The situation existing in Los Angeles as depicted in the letter of H. Lyons Hunt, M.D., seems to have been precipitated by the Narcotic Bureau which is operated by laymen and presumably is not able to appreciate the attitude and purpose of the medical profession in dealing with

diseased persons who may be addicts and who need morphine. A discussion of the whole subject is promised in the book written by Henry Smith Williams, M.D., LL.D., which will be available soon and which may lead the way to a more logical administration of the laws relating to the use of narcotics.

## AN AMUSING EXAMINATION PAPER

March 11 1935.

Editor *New England Journal of Medicine*

At a recent meeting of the Boston Medical History Club Osler's *Principles and Practice of Medicine* was considered. Over forty different editions and issues were exhibited now deposited in the Boston Medical Library. In addition to the general interest shown in the subject, a number of physicians spoke of the amusing examination paper originally published in the *St Thomas's Hospital Gazette* for March 1902 and later republished with additions in the same journal November 1907. These clever questions written by two eminent pathologists and a clinical physiologist attached to the Hospital, were based upon the fourth edition of the Textbook, issued in 1901. As there still seems to be considerable interest and these questions are difficult to find at the present time owing to the relative scarcity of *St. Thomas's Hospital Gazette* in this country one feels justified in republishing them.

In a note added to a reprint of the chapter in Osler's library Sir William wrote "About a month after the 'Examination Paper' there appeared a complete set of answers which was sent to me by my friend J. William White the well known Philadelphia surgeon." Will anybody attempt to answer these questions now?

1. Who was Mephibosheth? What parental superstition dated from his time?
2. What is "one of the saddest chapters in the history of human deception"?
3. Give Osler's quotations from the following authors John Bunyan, Byron, John Cheyne, George Cheyne, Montaigne. Explain the context where necessary
4. Describe if necessary with the aid of diagrams Kamp's double current rectal tube. What are the indications for their employment?
5. Give in full the name of the distinguished old Bath physician. At what period did he flourish, and what is his claim to distinction?
6. As a sequel to what therapeutic procedure did the son of Professor Langerhans die? What was the pathological and medico-legal interest of the case?
7. What is the chief recorded complication of a lay committee meeting at St. George's Hospital?
8. Who was convinced that more wise men than fools are victims of gout? Is there any reason why he in particular should hold that view?
9. What cases drift to 'museums and side-shows'?
10. How did Rousseau's patients make money?
11. What celebrated English physician preferred to die in harness? State the cause of death.
12. What internal evidence is there
  - (a) That Osler has had an unhappy experience with cheap bicycles?
  - (b) That he is interested in the history of Napoleon Buonaparte?
13. What is O. Rosenbach's dictum on the custom of wearing stays?
14. Quote Hunter's famous advice to Jenner
15. What was the counsel of Rondibilis to Panurge?
16. How did Eryximachus treat the hiccup of Aristophanes?
17. Give the references to Lady Mary Wortley Montagu President Jefferson Jerome Cardan the Elder Scaliger Captain Catlin, Laurence Sterne Thomas King Chambers Robert Druitt, and Colonel Townshend
18. What did Strabo call "the lapsing of the gout"?
19. Give the context of the following quotations and make explanatory remarks if necessary
  - (a) Cases are given after nearly every one of the specific diseases.
  - (b) I saw some years ago one of the most distinguished gynaecologists of Germany perform laparotomy in a case of this kind.
  - (c) The doses given by the late Alonzo Clark of New York, may be truly termed heroic.
  - (d) In a somewhat varied postmortem and clinical experience, no instance has fallen under my observation.
  - (e) A history of gorging with peanuts.
  - (f) I have seen Murchison himself in doubt.
  - (g) A toad like caricature of humanity.
  - (h) From the accurate view of Laennec and Louis the profession was led away by Graves and particularly by Niemeyer.
  - (i) One of the most powerful enemics of the American stomach at the present day
  - (k) I had a lesson in this matter which I have never forgotten.
20. Who was Van Helmont, and when did he live? Give a brief account of his opinion on contemporary medicine.
21. Who made an autopsy on Dean Swift and what did he report?
22. What interest attaches to
  - (a) The Pullman car conductor from Chicago
  - (b) The Appleton-Swain family
  - (c) Yellow cakes at Philadelphia.
  - (d) Chancellor Ferrier
  - (e) Master McGrath.
  - (f) Renforth the Garsman.
  - (g) Shattock's [sic] patient.
23. Who had a translucent head? What was the pathology of the condition?

parate slip bearing the name and address of the contestant in a larger envelope, and sent to

The Massachusetts Medical Society,  
Committee on Medical Education  
and Medical Diplomas,  
8 Fenway,  
Boston, Mass

The contest this year closes May 1, 1935 Reports may be submitted at any time prior to that date

**AN INVITATION TO FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY HARVARD UNIVERSITY MEDICAL SCHOOL COURSES FOR GRADUATES**

A list of activities in the Department of Pediatrics of the Children's Hospital and of the Massachusetts General Hospital, to which members of the Massachusetts Medical Society are cordially invited, appears below. These exercises are offered without fees as a part of the Courses for Graduates, of the Harvard Medical School, to those who are interested in keeping in touch with Clinical Pediatrics, without enrolling in the prescribed courses

The Children's Hospital and the Infant's Hospital  
Clinical-Pathological Conference — Thursdays,  
12 00 M (Amphitheatre)  
Clinic—Medical, Surgical and Orthopedic Services—The first Monday in each month, 4 00 PM (Amphitheatre)  
Clinic — Alternating Rounds between Surgical Service, Peter Bent Brigham Hospital (Amphitheatre) and Surgical and Orthopedic Services, Children's Hospital (Amphitheatre) —Thursdays, 4 30 PM

The Massachusetts General Hospital—The Children's Medical Service  
Clinical meeting of the staff—Alternate Fridays, 12 00-1 00 PM (Ether Dome)  
Ward Visit — Tuesdays, 2 30-4 00 PM (Massachusetts Eye and Ear Infirmary)  
Seminar for discussion of recent investigations and literature — Tuesdays, 4 00 5 00 PM (Pediatric Laboratory)  
Maynard Ladd, M.D.,  
In charge of Courses for Graduates,  
Department of Pediatrics

**REPORTS AND NOTICES  
OF MEETINGS**

**ESSEX SOUTH DISTRICT MEDICAL SOCIETY**

The Essex South District Medical Society held its regular meeting at Lynn Hospital, March 6, 1935 Clinical program

- 1 Chronic Bone Abscess (Brodie's Abscess)  
Complete Dislocation of the Astragalus Fracture  
Charles F. Damsky, M.D.

- 2 Congenital Heart Maurice T. Briggs, M.D., F.A.A.P.
- 3 Ovarian Pregnancy Thomas E. Culliton, M.D., F.A.C.S.
- 4 Thyrocardiac Stephen R. Davis, M.D., R.B. Cattell, M.D.
- 5 Human Hydrocephalus Mark I. Makler, M.D.
- 6 Adenocarcinoma of Colon (7 year cure) Louis H. Limauro, M.D.
- 7 Gas Bacillus Infection of Scrotum Saul Marcus, M.D.
- 8 Pyelitis of Pregnancy Richard J. Williams, M.D., F.A.C.S.
- 9 Postpartum Pyelitis Edward L. Peirson, M.D., F.A.C.S.

The guest of the evening, Dr. Henry R. Viets of Boston, gave an interesting account of the writing of the celebrated work on Medicine by Sir William Osler with whom Dr. Viets was intimately associated at Oxford during 1916

With photographs, lantern slides and copies of the book in several languages, and a description of the Osler Library at McGill, the talk was an inspiring account by a devoted pupil who had come under the spell of this great teacher

WM T. HOPKINS, Reporter

**MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL**

Doctor Christian discussed several cases of cardiac disease at the regular Thursday afternoon medical clinic at the Peter Bent Brigham Hospital on the twenty-first of February. The first case was that of a fifty-two year old woman, who entered in 1929 complaining of shortness of breath of several years' duration, now admitted because of diabetes mellitus without cardiac insufficiency. She gave a history of rheumatism and of tonsillitis, and six months of palpitation, as well as edema of her ankles and abdominal wall for one month. Physical examination disclosed an enlarged heart, dyspnea, systolic murmur, irregularity of rhythm, marked pitting edema of the legs and shifting dullness in the abdomen. The patient was critically ill and did not respond to a paracentesis and venesection. One and one-tenth grams of digitalis as well as caffeine and adrenalin did not help, and, although she had periods of temporary improvement, she repeatedly relapsed into a critical condition. The first electrocardiogram disclosed a condition diagnosed as block, and another showed paroxysmal fibrillation. On the basis of the poor response to digitalis the house officer in charge had metabolism studies carried out which showed a basal metabolic rate varying between plus fifty and more. This dropped to about plus thirty on iodine treatment and a subtotal thyroidectomy was performed in 1929. Doctor Christian pointed out that this case did not show the typical clinical appearance of hyperthyroidism, and that the true diagnosis was arrived at only by a process of logical deduction from the effect of digi-

talis on the patient. Such patients are not very rare.

The second case was that of a forty-seven year old woman who entered with a history of dyspnea of four years duration and of periods of substernal pressure. She has had some difficulty in seeing for the past year and was unable to talk for several weeks on one occasion. While in the ward she had definite pain of anginal character relieved by nitroglycerin, but developed a pain in her epigastrium which was not relieved by vasodilators. A physical examination showed a definite change in the peripheral vessels with marked hypertension, and some enlargement of the heart to the left. At first it was not thought that her symptoms resulted from cardiac insufficiency but she was very much improved on digitalis therapy. Doctor Christian emphasized that in some patients with cardiac insufficiency the evidence of decompensation on physical examination is not striking and it is always best to try a therapeutic test with digitalis whenever there is any question.

A third patient was a fifty-seven year old male Italian with a history of several Neisserian infections and one bad nosebleed eight years ago. One month ago he developed a cough productive of some mucus and a tight feeling in his chest. He has had orthopnea for two weeks and his abdomen is distended. Three days before admission, after procuring a job both legs, scrotum and penis swelled with edema. Physical examination showed a yellow tint to the sclerae, numerous moist rales at both bases, a blood pressure of two hundred and twelve over one hundred and twenty, shifting dullness, and pitting edema of the legs and scrotum. The heart was enlarged but the sounds were of good quality. Doctor Christian considered the problem that frequently occurs of distinguishing between renal and cardiac insufficiency and said that in this patient the history of definite difficulty when he procured a job helped to diagnose the condition as cardiac and said that the patient's edema ought to disappear with rest, diuretics and digitalis.

A fifty three year old male painter was the fourth patient of the afternoon. He gave a history of a severe cramp-like pain in his lower abdomen, occurring one month ago and lasting for two hours. Two weeks ago immediately after defecation, a great deal of watery black material followed. Another black, but formed stool occurred the next day and since that time the stools had been normal colored. Two days after this incident he felt weak and was pale. Physical examination showed a systolic thrill in the region of the aorta with a normal rate, a loud rough systolic murmur followed by a distinct second sound and an early low pitched murmur extending through diastole. It was believed that he had an aortic stenosis with less marked regurgitation. His blood pressure is practically normal, although his pulse pressure is slightly less than usual and he has a suggestion of a plateau pulse. By x-ray there is a narrowing of the aorta and calcification in

the region of the aortic valve. A definite duodenal ulcer was found by fluoroscopy which explained the abdominal symptoms and bleeding.

#### NEW ENGLAND HEART ASSOCIATION

Dr Hyman Green presided at the February meeting of the New England Heart Association which was held in the Children's Hospital on the twenty fifth of February. The first paper was presented by Dr Bland who spoke on a case of diphtheritic myocarditis in a four year old child who entered with a chief complaint of severe abdominal colicky pain. One month before entry the patient had a severe sore throat with swollen glands which subsided after four days. Two weeks before entry a severe pain in the upper abdomen was accompanied by occasional vomiting. Two days before admission the face had become swollen followed by frank edema of the whole body. On physical examination the temperature was normal and the pulse irregular with many extrasystoles. There was edema of the arms, hands and legs. The liver was enlarged, the blood pressure was eighty over thirty and the heart was enlarged, the sounds poor, the rhythm irregular and the electrocardiogram showed occasional extrasystoles, low voltage and inverted T, and T. The Schick test was positive. A diagnosis of diphtheritic myocarditis was made, and the child was treated with morphia, luminal and a solution of glucose by rectum. One-half cubic centimeter of salyrgan was administered intramuscularly followed by profuse diuresis, so that within four days the liver receded and the edema disappeared. There was a stormy convalescence, but the child was discharged improved at the end of the third month at which time the x-ray showed the heart to be of normal size and the electrocardiogram was normal. It was pointed out that diphtheritic myocarditis is still a problem and that the value of anti-toxin early in the disease cannot be overstressed. The administration of glucose after the heart starts to fail is very effective and occasionally causes a striking diuresis. Although digitalis has no marked effect, it is usually given in cautious amounts. Mercurial diuretics have not had a recognized place in the treatment of the circulatory failure of diphtheria but in this instance appeared to be of great value and to deserve further trial. When the patient has passed the acute stage the prognosis is excellent.

The second case was that of a fourteen month-old infant who developed bronchitis with vomiting fifteen days before entry and convulsions six hours before. The patient was very ill on entry with marked Cheyne-Stokes breathing, spastic paralysis and a markedly increased intracranial pressure with engorged retinal veins and bulging fontanelles. The heart was definitely enlarged and there was a secondary anemia with a hemoglobin of thirty-four per cent. The heart sounds were poor and there was a gallop rhythm as well as a mid-diastolic murmur a systolic murmur and a third sound. The blood pressure was one hundred and sixty over thirty. The

heart changes were thought to be due to anemia. The pathological specimen showed a well marked, pale thrombus in the right ventricle near the apex and the pulmonary artery was full of thrombi, and there were many pulmonary infarcts as well as an interstitial pneumonia. The longitudinal sinus was thrombosed, a condition which is rarely diagnosed before death. No anomaly was found in the heart.

Dr Green gave the history of three cases of congenital heart disease one with pulmonary atresia and intraventricular septal defect, one with two auricular septal defects,—a patent foramen ovale and a persistent ostium primum, and the third with an aneurysm of the arch of the aorta, coarctation of the aorta and a patent ductus arteriosus. Dr Green also showed numerous photographs of patients with congenital heart lesions, demonstrating the fact that other congenital anomalies frequently occur in the same individual.

Dr Paul W Emerson then spoke on the work that he and Dr Green have been doing at the Children's Hospital. They have taken one hundred living cases of congenital heart disease and have tried to diagnose them by comparing the x-ray picture of the heart with x-rays taken in other children with known congenital lesions. In this study they have been particularly interested in prognosis which they feel is good in cases in which there is no enlargement, dyspnea, or cyanosis. At times it is difficult to tell whether the lesion is congenital or acquired. One-third of the cases have pain of unknown cause, especially in the abdomen, and the murmurs are usually harsh and heard best at the base. Palpation of the suprasternal notch for a thrill is important. As the heart increases in size the symptoms of dyspnea, cyanosis, and "spells" are increasingly frequent. In correlating the shape of the x-ray shadow of the heart with various congenital cardiac anomalies the cases were divided into twelve groups. These groups were demonstrated and often a striking similarity in the shape of the heart was shown by x-ray where the lesion was identical. In infantile coarctation the rib changes are rarely, if ever, seen under the age of twelve years.

In closing, a case was presented in which the diagnosis of three cardiac defects was made by the shape of the x-ray shadow of the heart. These were proved to be correct at postmortem, although there was also a transposition of the great vessels.

#### CLINICAL MEETING OF THE MASSACHUSETTS GENERAL HOSPITAL

A clinical meeting at the Massachusetts General Hospital was held on the twenty-eighth of February on the subject of "Physicians, Patients, and Pay." The first speaker was Dr Channing Frothingham who talked on "A Summary of the Problem as a Whole." The physician's job is to provide the people with the best medical care, the patient's job is to learn how to get the best medical care, and he must realize that while good medical care is expensive, poor medical care is very expensive.

In order for the physician to provide the people

with the best medical care he must strive first of all to get rid of the numerous cults and to do away with poor doctors. Three of the six grade "C" medical schools in the United States are in Massachusetts. There must be standards for specialists. We must have good hospitals, each of which must be a complete unit able to treat the patient as a whole. Office hours should be abolished and patients treated only by appointment because of the hurry that results from a full waiting room, and the consequent poor diagnosis. The doctor must protect research and make an honest attempt to keep up to date. Perhaps frequent examinations would be of benefit.

The patient in his attempt to secure the best medical care should have some one medical man to whom he can go and who will send him to the proper specialist when necessary. Patients waste an untold amount of money attending members of various cults and on self medication. Good medical care is expensive but much money is wasted on poor advice. Too much money is not spent on medical care, but it is a question of distribution. The abuse of charity must be avoided and doctors should be paid for their charity work. A patient should always have a free choice of his doctor, rather than having one assigned to him. Groups studying this problem should be encouraged, and the medical profession should be well represented in such groups.

Professor Douglass Brown spoke on "The Accomplishments in Other Communities and Countries." The Health Insurance Act was passed in Great Britain in 1911. It affects seventeen million workers, or about one-third of the population. The medical benefits consist of the services of a general practitioner. Eighty per cent of the general practitioners of Great Britain have this insurance practice as well as private patients. The average doctor has about one thousand patients a year and is paid two dollars for each of them, so that he gets two thousand dollars from his insurance practice. The insured have free choice among these doctors. Although the British Medical Association was much opposed to this scheme at first, at present they want it extended to include nursing and specialists' services. It has been financially successful.

In Germany a health act was passed in 1883 affecting about one-third of the population at that time, and now including about sixty per cent of the population. This provides specialists and most hospital services as well as the general practitioner. Eighty per cent of all the doctors in Germany are included, and most of them are completely dependent on their insurance practice for their income. There is much red tape connected with the system, and much opposition from the medical profession at the present time, because it gives an inadequate income. Financially it was fairly successful until 1930, at which time there was a deficit. An initial fee of twelve cents must be paid by each patient and prescriptions must be paid for.

In Texas there are several typical hospital insurance plans in operation whereby the patient pays a

certain amount, and in return is guaranteed so many hospital days if needed. Some of those plans are managed by commercial firms. One clinic which was furnishing medical services for one dollar a month to certain city employees was declared unethical by the county medical association a decision which was upheld by the American Medical Association, and the clinic was forced to withdraw its contracts.

In California the medical society has approved a state health insurance plan. There is a marked development of commercial organizations to provide services for a certain amount of money and they hire the doctors. One clinic provided medical services for fifteen thousand people at two dollars a month per family although the county association has called this unethical, and the state association has upheld the decision but they intend to continue and will carry the matter to the courts if necessary. There are numerous county social plans for the indigent, and in general an attempt is being made to select those who can pay and to refer them to a physician at the regular rate. It is interesting to note that fifty per cent of the medical practice of California is so-called irregular practice.

In reference to Michigan Dr. Brown discussed the Wayne County Plan. There are three types of patients first, those unemployed and on the ERA where the physicians are paid by the ERA secondly the unemployed not on the ERA who are sent to private physicians at reduced rates and thirdly those who are employed and who go to private physicians and where a fee is set which can be paid within one year in installments. Almost complete care can be provided for about twenty-eight dollars per year per person and a definite plan on a fee basis for doctors has been well worked out and is soon to be put into operation.

Dr. Alexander S. Begg spoke on "The Legislative Trends Local and National". He said that there are many people trying to solve the problem at present, and it is largely a matter of too many cooks spoiling the broth. From a national point of view very little has come out on health insurance. The American Medical Association has laid down certain principles, and a compulsory insurance bill has been introduced into all those states where the Legislatures are meeting this year. This bill was recently introduced into the Massachusetts Legislature, but is not a serious problem at present, for it is entirely unsuited for Massachusetts and there is no danger of its passing. The usual bills concerning vaccination have arisen. One of these is intended to extend compulsory vaccination to those attending private schools and there are the usual bills which plan to do away with compulsory vaccination altogether. There is a bill coming up before the Legislature to compel doctors to keep parts removed from the body for six weeks before they are disposed of. This bill has been given leave to withdraw.

House Bill 756 was introduced by the Massachusetts Medical Society and was designed to give the

Board of Registration the right to approve medical schools from which applicants for registration have come. In this way the Board would be able to decide on the standards at these schools, and the bill is definitely planned to improve the curricula of the low standard schools. There has been much propaganda with regard to this and it is doubtful whether the Committee will favor its passage. Dr. Begg concluded by pointing out that every other interest in the country has propaganda and lobbies in Washington, and it may be that the medical association needs such a lobby to protect its interests.

In the discussion which followed Mr. Bradley from Brattleboro discussed what that community had attempted to do in regard to medical insurance. It has tried to provide for the medical emergency and have established sums for certain specified contingencies. No contracts have been made with doctors and there has been no interference with the patient's choice of a doctor. Above the price of thirty dollars some hospitals services are given, and certain surgical services.

Doctor Codman pointed out the high cost of poor medical care and compared the cost of neglected injuries with various known expenditures. Thus sixty three neglected injuries cost the same as the entire out patient department of the Massachusetts General Hospital for one year. Sixty seven such cases will equal the annual cost of the American College of Surgeons. Three hundred and sixty of these cases cost the same as the amount needed to run the Harvard Medical School for one year. The cost of six hundred such cases would run the entire Massachusetts General Hospital, the Baker Memorial, and the Phillips House, or would equal the costs of the American Medical Association.

Doctor Means spoke of the importance of the medical profession becoming conscious of the changes being contemplated by various societies and legislative bodies as regards patients and their relationship to the physician particularly from a financial point of view. He spoke of the fact that in Massachusetts we are particularly fortunate in having an Editor for our *New England Journal of Medicine* who is entirely sympathetic with the physician's viewpoint.

Dr. James R. Miller of Hartford called attention to the fact that America might take a leaf from the book of France in the management of this problem. Dr. Walter Lane brought out the point that large amounts of money are spent on proprietary medicines although many of the Boston newspapers do not advertise certain objectionable medical material. It is time to shut down on certain radio programs because this money should be spent on good medical care. It is likely that medical men will become more militant in the future, and this is as it should be, because at present the tendency is to say "no to everything and not to substitute any constructive plan. We must remember that the problems vary from community to community according to the make-up of the population. Also the present

system is valuable in so far as it provides so much teaching material for the medical student

Dr Begg mentioned two more bills which may come up before the Legislature. These are bills to establish a separate board of registration for the magnetic healers and for the chiropractors. They will probably both be given leave to withdraw. Professor Brown in answer to a question of how the British system was working said that British physicians agree that there is much hurried diagnosis and prescribing, although in general the situation is much better than it was before for the same class of people.

#### WILLIAM HARVEY SOCIETY

The William Harvey Society met in the auditorium of the Beth Israel Hospital on the evening of February 8, 1935. Dr Hyman Morrison presided and Dr Arthur M Fishberg of New York City spoke on "Peripheral Vascular Collapse."

The underlying etiology in cases of shock is failure of the peripheral circulation, rather than failure of the heart. Such a condition occurs in severe trauma, hemorrhage, myocardial infarction, rupture of a viscus, diabetic coma, dehydration, and in the terminal stages of a great many diseases. The mechanism which gives the clinical condition of shock is the same in all these states. The heart is not enlarged or dilated, nor is there any pulmonary engorgement, orthopnea, accentuated pulmonary second sound or engorged neck veins. Dr Fishberg stressed the diagnostic importance of the poorly filled veins so that the superficial neck veins cannot be seen, and the venous pressure falls sometimes to less than four centimeters of water. By this simple observation of the condition of the superficial veins a differential diagnosis of cardiac failure and peripheral circulatory collapse can be made.

In traumatic shock, either secondary or primary, the blood flow is found in severe cases to be only fifty two per cent of the normal. The theory that histamine-like substances are released from the traumatized area and cause collapse has been largely abandoned, and it has been shown that the injured part acts as a sponge, and thus lessens the circulating volume of blood. In primary traumatic shock where there is no latent period the shutting off of large volumes of blood from the circulation is probably nervous in origin.

Hemorrhagic shock with or without trauma is caused by a decrease in the circulating volume. If the loss of blood is small, it may be considerably compensated for by a contraction of the smaller vessels, in which case there is no shock. In postoperative shock, the circulating volume is likewise lowered, due to several factors, the most important of which are hemorrhage, perspiration, vomiting, hyperventilation, and the usual preliminary catharsis. There is also considerable loss of fluid by local extravasation of plasma into the localized operated area. In diabetic acidosis circulatory collapse is a potent factor, and is due chiefly to dehydration from the

polyuria, Kussmaul breathing, vomiting, and sweating. The increased acidity of the urine tends to cause a diuresis. It is important to follow the blood pressure in these patients and to realize fully the importance of a fall in systolic pressure below eighty millimeters of mercury. In burns the shock is due to excessive loss of plasma at the local lesion. In the crises of Addison's disease the venous pressure may fall to a low point, and the injection of cortin increases the blood volume. In coronary thrombosis there is a peripheral circulatory collapse with or without slight cardiac failure. Some cases may be due entirely to cardiac failure, but typically in the first stage of the condition during the first few days there is only the peripheral collapse, the cardiac failure coming on later if the condition of the heart does not improve. If there have been previous attacks of cardiac decompensation, there will probably be cardiac failure with the usual orthopnea, cyanosis, cold and clammy hands, etc. The peripheral collapse comes immediately after the occlusion and is present with even very small cardiac lesions. Nervous reflexes apparently cause the circulating volume to fall below normal perhaps by a stagnation of a large volume in dilating capillaries. In some cases the blood volume is above normal, however. This peripheral collapse tends to prevent heart failure as it does not allow the circulation to strain the weakened myocardium. Both the circulating volume and the arterial pressure are lessened, so that the damaged heart cannot pump the necessary oxygen supply to the vital centers. Sometimes even this diminution in the labor that the heart must do is not sufficient to save the heart from becoming dilated. Often as the peripheral circulatory collapse clears, cardiac failure sets in. Although some patients die with the initial peripheral collapse, it is a protective mechanism. The rare occurrences of rupture of the heart as well as pneumonia and pulmonary infarction most commonly come when the shock is subsiding.

The shock coming with vomiting and diarrhea can be entirely explained on the lessened volume of fluid and electrolytes. Acute infectious diseases, when they last more than a few days, are also apt to lead to circulatory collapse which may be peripheral, cardiac, or both. With the exception of rheumatic fever this is more apt to be peripheral than cardiac, and each case should be carefully studied to see which type is present. Gallop rhythm is an important sign of myocardial failure, and the condition of the superficial veins is again diagnostic. Digitalis is definitely indicated if it is cardiac, but of no use if peripheral.

In summary it may be said that there are three general mechanisms which lead to peripheral circulatory failure: first, mechanisms leading to the loss of blood or plasma, such as trauma, burns, diabetic coma, and vomiting; secondly, the nervous reflex causing a dilatation of capillaries and stagnation of blood as in primary traumatic shock and the early stage of coronary thrombosis; and thirdly, as a re-

sult of spasm of the hepatic pulmonary and other veins, such as is caused by histamine and which may be significant in anaphylactic shock. The circulation in peripheral circulatory collapse adapts itself by an arteriolar constriction which tends to prevent a fall in the arterial blood pressure, and also to allow more blood to reach the brain and vital centers. It is only in the late stages that the peripheral vessels relax.

In considering therapeutic measures to combat peripheral circulatory failure it is necessary to attempt first of all to remove the primary cause of the condition and secondly to attempt to improve the efficiency of the circulation and increase the venous return by increasing the volume of blood decreasing the vascular bed and diverting the blood to the main centers. The best measure to increase the volume of blood is transfusion. One and two-tenths per cent sodium chloride solution in the opinion of the speaker gives better results than an isotonic saline solution, and at this higher concentration the cells are not damaged. The beneficial effect of sodium chloride in Addison's disease is due to the specific action of the sodium ion. There is no danger of overburdening the heart so long as the tissues are dehydrated and provided the fluid is not administered too rapidly i.e. five hundred cubic centimeters of one and two-tenths per cent saline each hour and as much as four or more litres of fluid in twenty four hours. In diabetic acidosis it is more important to overcome the dehydration than to treat the high blood sugar. Sodium lactate and sodium bicarbonate have been used but probably have no advantage over sodium chloride. Intravenous glucose has certain advantages but is of no use unless the electrolytes are also restored and should not be used in postoperative collapse. Gum acacia has not proved to be useful because of the frequent occurrence of unfavorable reactions.

In an attempt to decrease the vascular bed vasoconstricting drugs, such as epinephrine, may give a transient effect with an elevation of venous pressure and an increase in cardiac output. The usual method of administration is to add the drug to the intra venous saline. In coronary thrombosis it must be remembered that there is a severe lesion of the heart and that the collapse is a protective measure, and that, therefore, it is necessary not to attempt to increase the venous return unless the patient becomes pulseless at which time intravenous epinephrine may be administered.

#### HARVARD MEDICAL SOCIETY

Dr Christian presided over a meeting of the Harvard Medical Society held in the Peter Bent Brigham Hospital on February 1<sup>st</sup>. The first case was presented by Dr Vylure. A forty-eight year old woman was admitted to the hospital in coma. At two A.M. she had wakened feeling sick and vomited. The next morning she could not be aroused. Except for occasional fainting attacks her past history was negative. Physical examination revealed an underdeveloped woman exhibiting occasional clonic

convulsive spasms with pin point pupils, bilateral Babinski's and hyperactive reflexes. Laboratory findings were normal except for a blood sugar of thirty. She gradually regained consciousness on intravenous glucose and a high carbohydrate diet, although at the end of her thirteenth day of hospital stay she was still disoriented and she had had occasional attacks of fever lasting seven or eight hours at a time. Sugar tolerance and serology studies as well as x rays of her skull, disclosed no abnormality. In the discussion the question of Simmonds' disease was brought up. Dr Cutler suggested that there might be a pancreatic islet cell tumor although the onset in these is usually far more gradual. Diagnosis has not yet been made.

The second case was presented by Dr Harrison. A twenty five year old male entered the surgical service on December 4, 1934. He had been treated since 1933 for an ulcer and during his present stay in the hospital had a gastrectomy followed by two blood transfusions. Some days later he developed an area of consolidation in his lungs and on February fifth an abscess was drained surgically. There seemed to be a definite response to arsphenamine therapy. Dr Cutler discussed the case briefly and said that it was typical of a postoperative embolic abscess and that a complete recovery could be expected within eight to ten weeks. "Such abscesses," he said "should be drained before they become chronic."

Dr Magnus L. Gregersen spoke on "The Significance of Changes in Plasma Volume as Determined by the Dye Method." The determination of blood volume under different methods is of fundamental interest to the physician and the clinician in order that they may better understand the factors causing a decrease of volume and its rate of restoration. In hemorrhage when the vasoconstrictor mechanism overcompensates the restoration of volume appears to be slow while if the vasoconstriction is less marked the volume returns to normal more quickly. Studies of the blood volumes before and after operations would allow the surgeon to understand more fully the extent of the changes resulting from his procedures.

There is a distinct parallelism between thirst salivary flow and plasma volume. Hemorrhage reduces the salivary flow. A single determination of volume is of little value since there may be appreciable normal variations. Obese people normally have a small blood volume. The chief methods used for measuring blood volume in man are first, the carbon monoxide method; secondly the dilution method and thirdly the dye method. By the carbon monoxide method the blood volume is about forty-five to fifty cubic centimeters per kilogram of body weight, while by the different dye methods it is about eighty cubic centimeters per kilogram. This discrepancy may possibly be explained by unequal distribution of red cells in the circulation. The blood volume of the average man by the dye method is about six thousand cubic centimeters.

The determination of the concentration of dye in

plasma with the simple colorimeter is grossly inaccurate unless the standard and the unknown are nearly the same concentration, because the solvent itself (plasma) is colored to some extent. In repeated determinations the presence of residual dye accentuates the error. The compensating colorimeter (Bürker) was designed to overcome this difficulty, but bizarre results are apt to be found because of the peculiar optical effects in colloidal solutions especially when they are turbid.

The spectrophotometer is used to overcome this difficulty. Also the errors caused by hemolysis can be avoided by using blue dyes since their absorption curves show that they absorb light in a region where there is practically no absorption by hemoglobin. After several dyes had been tried out, T-1824 was chosen because it disappears very slowly from the blood stream (five to eight per cent per hour).

About four per cent of the dye is lost in the cells when the blood is centrifuged, but since the dye can be recovered by washing the cell residue and since both the dye and the red cells carry negative charges, it appears that this small amount of dye is trapped in the plasma which is carried down with the cells and is not absorbed by them. T-1824 is not removed from solution during clotting. The dye concentration in the circulation plasma can therefore be obtained from serum.

Dr John G Gibson, II, then spoke briefly on "The Toxicity of Two Dyes in Plasma Volume Determinations". In discussing the toxicity of T-1824, Dr Gibson pointed out that it is a complex organic compound of the azo group and belongs to the group known as vital dyes. It is very stable. Large doses give a diffuse immediate staining to the body which is due to the dye's presence in the capillaries, but not in the tissues. Later it is found histologically in the Kupffer cells and other parts of the reticuloendothelial system. The dye is eliminated in the bile and has very little toxic effect on the parenchymal cells of the liver and kidney in which it is taken up. The rate of growth of rats apparently is not affected by any but very heavy doses of T-1824. The principal pathology present in fatal doses seems to be in the lungs where there is a collection of phagocytes in the tissues and around the bronchi. Vital red is also excreted by the liver unchanged and the kidney is unable to excrete either of these dyes. In conclusion Dr Gibson said that T-1824 in its purified form is not harmful in doses of two-tenths of a milligram per kilogram of body weight.

In the discussion which followed, Dr Cutler asked whether water restored the normal volume after hemorrhage as soon as transfusion, but the speakers of the evening had done no experiments on transfusion. Dr Christian spoke on the importance of this work, as it has developed a method which is accurate enough to be of definite use to the clinician.

#### MYOCARDIAL INSUFFICIENCY

Dr Henry A Christian delivered a lecture at the Peter Bent Brigham Hospital on the morning of the

eighteenth of February on "Myocardial Insufficiency". This group of cardiac patients contains more cases of adult heart disease than any other type, making up from fifty to seventy-five per cent of the reported cases of heart disease in this age group. This myocardial disturbance with normal cardiac valves increases in direct proportion to age. With the exception of aortic stenosis, the valvular type of heart disease is distinctly uncommon in the older patient. Many terms are used to describe myocardial insufficiency, among others are chronic myocardial disease, chronic myocarditis, myocardosis, chronic non-valvular heart disease, hypertensive heart disease, and arteriosclerotic heart disease. Perhaps the best of these terms is chronic myocardial disease, since the ending "itis" has come to connote inflammation, often there is no hypertension, and it is not due to arteriosclerosis. The essential lesion is in the myocardium, although pathologically an organic lesion often cannot be found and the mechanism is not understood. Since many do not have hypertension, the myocardial insufficiency cannot be explained on an increased peripheral resistance. Dr Christian emphasized the fact that it is very rare for syphilis to play any part in this type of heart disease, although there may be coincidental luetic infection. Syphilis occasionally affects the coronary vessels, but not the cardiac muscle, and in general it may be said that the effect of lues stops at the aortic cusps.

The symptoms and signs of cardiac failure are the most important points in the diagnosis of this condition. Almost always there is cardiac enlargement. Murmurs are of no diagnostic or prognostic significance. Many cases have no murmurs, although often there is a systolic murmur due to dilatation of the heart, and this murmur may have any degree of loudness and harshness. In consideration of diastolic murmurs we must distinguish those significant of organic valvular disease and those which are not. Frequently there is a presystolic thrill and murmur at the apex without any mitral stenosis especially in patients with hypertension. Also we are apt to find a diastolic murmur immediately after the second sound at the base, similar to that of aortic insufficiency, usually this is due to a dilatation of the aortic orifice, or more commonly the pulmonary orifice.

The cardiac rhythm is not of any great significance. Extrasystoles are frequent and auricular fibrillation is common in the late stages of this condition. One group of patients with myocardial disease have a regular rhythm at a rate which is not accelerated at rest, and in this type we are apt to confuse the condition with renal failure. Because of the excellent response to cardiac treatment it is important to diagnose correctly this type. The quality of the sounds does not aid us particularly in the diagnosis, as they may be entirely normal, although a gallop rhythm is of some help, and, in general, gives a poor prognosis. However, the most significant prognostic evidence is secured from the observation of a pulsus alternans which implies a

poor prognosis unless the cardiac rate is very rapid as in paroxysmal tachycardia when it means nothing.

The treatment is the same as for other chronic cardiac insufficiencies. Digitalis is apt to be more effective in this group where the valves are not diseased because of its direct effect on cardiac muscle and also because this type of cardiac failure tends to occur in older individuals in whom there is a decreased water content of the myocardium, since digitalis has a distinct hydrophilic effect. Digitalis is tolerated well and mouth dosage is adequate usually although it may be poorly absorbed at first because of severe congestion of the intestinal mucosa in which case the intravenous or intramuscular route must be used for a few days. Some of these patients are apt to vomit considerably and for them the rectal route works well.

The diuretic drugs are particularly valuable in this group of patients. Doctor Christian discussed the pharmacology of the diuretics saying that they could be divided into two large classes first, the xanthine and secondly the mercurial. Mercury was used a long time ago fell into disuse and has been rediscovered recently. Of the xanthine group caffeine has only a fair diuretic action theobromin is somewhat more active and theophyllin and its compounds are the most effective of the group. The chief mercurial diuretics are merbaphen (novasurol) containing thirty four per cent mercury meraryl (salyrgan) somewhat less toxic than merbaphen though containing more mercury and mercupurlin which is a combination of a mercury salt with theophyllin. In general the higher the mercury content without toxicity the greater is the diuretic action.

Clinically both diuretic groups may be used. Apparently they do not work on the kidney in the same way in all cases. One diuretic may work better on one individual than another and all the mercury diuretics have the disadvantage that they must be given intramuscularly or intravenously while the xanthine group can be given by mouth. Much experimental work has been done to discover the mode of actions of these diuretics. Theoretically they may have one or more of the following actions: first, they may cause an increased blood flow to the kidney as a whole; secondly open up more glomeruli; thirdly increase the blood flow in the afferent arteriole of the glomerulus; fourthly cause a contraction of the efferent arteriole of the glomerulus which likewise will increase the intra-glomerular pressure; fifthly increase the permeability of the membrane of the glomerulus and sixthly decrease tubular reabsorption. Besides the above possibilities the diuretics may act extrarenally by changing the affinity for water of the colloids or affecting the fixation of the electrolytes in the tissue, and consequently their amount in the blood. Schmitz Bartram and Fulton, among others have recently reviewed these data. Evidence has accumulated that both the direct action on the kidney as well as extrarenal action may be factors and it

has been amply demonstrated that different diuretics act in a different way in individual animals as well as in individual species. Clinically it is important to remember that the different diuretics have different modes of action and that the sub-groups have individual differences, and that it is therefore advantageous to try several diuretics in an attempt to increase the urinary output when such is desired.

#### MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

A meeting of the Middlesex South District Medical Society was held March 7 1935 at noon, at the Hotel Continental Cambridge Mass. One hundred and fifty six Fellows were present at the dinner.

The meeting was called to order by the President, Dr Allen E. Blake. The minutes of the previous meeting were accepted unread. Dr Alexander A Levi Secretary then read various communications one from Dr Walter P Bowers urging the members of the Society to write the advertisers in the Journal for samples. He stated in his letter that "this would be of great advantage to us and would relieve the Society of some expense in maintaining this publication."

Dr Levi next read a copy of Resolutions which were adopted at the previous meeting. The following letter containing these Resolutions which had been mailed to the Superintendents of sixteen hospitals in the District, was then read:

#### Dear Superintendent

The following Resolutions were unanimously passed at a recent meeting of the Middlesex South District Medical Society. Since your hospital is in this District these Resolutions are respectfully submitted to you for your consideration.

"It is the hope of this Society that you will bring this letter to the attention of the Board of Trustees of your institution and that you will favor us with a statement of the attitude of your trustees on this matter.

#### Resolutions adopted

"1. That the Trustees of Hospitals in this district be requested to make all industrial accident cases private patients in the hospital.

"2. That the Trustees of Hospitals in this district be requested to require from each patient applying for ward service a letter from a physician certifying that it is a suitable case for such service."

Very truly yours,

(Signed by the Secretary)

A summary of answers received was then read by the Secretary. The resolutions were referred to the Trustees in two instances, namely The Cambridge Hospital and Leonard Morse (Natick) Hospital.

No reply was received in five instances namely, The Emerson Hospital (Concord) Framingham Hospital Valden Hospital Marlboro Hospital and Lawrence Memorial Hospital (Medford).

The Resolutions were adopted by nine hospitals, namely, The Symmes Arlington, Middlesex, Whidden Memorial, Framingham Union, Newton, Somerville, Waltham, Winchester and Charles Choate Memorial (Woburn) Hospitals. A number of these hospitals already had the plans in operation.

Dr Elmer C Barron announced that the Malden Hospital, and Dr C W Smith that the Marlboro Hospital had adopted the Resolutions, but no reply had been sent to this effect.

Dr O'Brien reported that progress had been made by the Joint District Society Committee and that he would give a more detailed report at some future meeting.

Dr Charles E Mongan called attention to medical legislation and urged the doctors to become politically conscious. He made the following motion, which was passed by a unanimous vote:

"Resolved The Middlesex South District Medical Society of the Massachusetts Medical Society, in meeting assembled March 7, 1935, heartily approves the action taken by the House of Delegates of the American Medical Association at the special meeting held at Chicago on February 15 and 16, 1935, in regard to the medical aspects of the proposed Federal Economics legislation."

The members of this District were urged to obtain and read pamphlets prepared by the Bureau of Medical Economics, of the American Medical Association, Chicago. The pamphlets explained sickness insurance and the one especially referred to is entitled "Sickness Insurance Catechism."

The business meeting was then adjourned.

Dr Harold A Chamberlin, Professor of the Department of Urology at the Tufts College Medical School, delivered a paper entitled "Hematuria—Its Significance as a Symptom." The paper was illustrated by lantern slides and was exceedingly informative.

ALEXANDER A. LEVI, M.D., Secretary

#### THE NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the society will be held in the Walter E Fernald State School, Waverley, Mass., Tuesday, March 26, 1935, at 3 P.M. Telephone Waltham 3600

#### PROGRAM

- Visit institution, 3 to 4 P.M.
- Demonstration, 4 15 to 4 45 P.M.
- Presentation of cases, 5 to 5 30 P.M.
- Business meeting, 5 45 P.M.
- Collation, 6 15 P.M.

Your Executive Committee suggests that the invitation of Dr Green and his staff affords a special privilege for the membership to visit this fine institution and requests the members to make a special effort to be on the grounds at 3 P.M. in order that they may witness the operation of one of the most

interesting and important functions of the institution—the hospital school, which adjourns at 4 P.M. The school is about one mile from Waverley Square, Belmont, on Trapelo Road, left turn into the grounds

FRANK S CRICKSHANK, M.D., Secretary  
1236 Beacon Street, Brookline

#### INTERNATIONAL ASSOCIATION FOR PREVENTION OF BLINDNESS

The General Assembly of this Association will be held in London, England, on Friday, April 5, 1935, at 2 P.M., at the House of The Royal Society of Medicine, 1 Wimpole Street, during the Congress of the Ophthalmological Society of the United Kingdom, with the following agenda:

1. Administrative report by the Chairman of the International Association for Prevention of Blindness
2. Scheme of International Classification of the Causes of Blindness
  - Opening report by Professor van Duyse (Ghent)
  - Discussion
3. Hereditary Diseases of the Eye Ending in Blindness, Their Social Consequences, General Preventive Measures
  - Opening report by Professor Franceschetti (Geneva)
  - Discussion

#### NEW ENGLAND PEDIATRIC SOCIETY

FRIDAY, MARCH 22, 1935

#### AFTERNOON SESSION

Massachusetts General Hospital  
Upper O P D Amphitheatre

- 4 30 P.M. Demonstration of Cases, Staff Members of the Massachusetts General Hospital
- 6 00 P.M. Buffet Supper Price 60 cents Cafeteria, Massachusetts General Hospital

#### EVENING SESSION

Massachusetts General Hospital  
7 00 P.M.

- 1 Classification of Congenital Heart Malformations, Paul W Emerson, M.D., Boston, Mass
- 2 Whooping Cough and Its Prevention, Louis W Sauer, M.D., Evanston, Illinois

HENRY E GALLUP, M.D., Secretary

#### MASSACHUSETTS GENERAL HOSPITAL

Clinical Meeting, Thursday, March 28, 1935 Moseley Memorial Building, 8 15-10 P.M.

#### PROGRAM

Presentation of Neurological Cases

- 1 The Selective Follow-Up System of the Massachusetts General Hospital James B Ayer, M.D.

- 2 Causes of Convulsions** Stanley Cobb M.D.  
**3 Surgical Treatment of Epilepsy** W Jason Mixter, M.D.

Physicians, medical students nurses and social workers are cordially invited.

COMMITTEE ON HOSPITAL MEETINGS,  
 ARTHUR W ALLEN Chairman  
 WILLIAM B BREED Secretary

### SUFFOLK DISTRICT MEDICAL SOCIETY

The March meeting of the Suffolk District Medical Society will be held on Wednesday March 27 1935 at 8:15 P.M. at the Boston Lying In Hospital.

#### PROGRAM

Discussion on Pathological Ova. Dr Arthur T

Hertig

Demonstration on Diabetes in Pregnancy Dr David Hurwitz, Dr Frederick C Irving

GEORGE P REYNOLDS M.D., Secretary

### HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Shattuck Street Entrance) Tuesday evening March 26 at 8:15 P.M.

#### PROGRAM

##### Presentation of Cases

The Circulation in Normal and Hypertrophied Hearts By Dr Joseph T Wear Professor of Medicine, Western Reserve Medical School Cleveland, Ohio

The Establishment of Collateral Blood Channels to the Heart by Operation By Dr Claude S Beck, Associate Professor of Surgery Western Reserve Medical School Cleveland Ohio

MARSHALL N FULTON M.D., Secretary

### SOCIETY MEETINGS,

### CONGRESSES AND CONFERENCES

#### CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY MARCH 25, 1935

Monday March 25—

8:15 P.M. New England Heart Association, Evans Building at the Massachusetts Memorial Hospital, 83 East Concord Street, Boston.

Tuesday, March 26—

1:30 P.M. Radio Program—WEEL Amoebic Dysentery

12:30-4 P.M. Ward visit, Massachusetts Eye and Ear Infirmary

4:45 P.M. Seminar Pediatric Laboratory Massachusetts General Hospital.

4:30 P.M. Radio Program—WBZ Public Health in Massachusetts in 1934."

8:15 P.M. Harvard Medical Society, Peter Bent Brigham Hospital Amphitheatre (Shattuck Street entrance)

Thursday March 28—

"11 A.M. Clinico-Pathological Conference. Massachusetts General Hospital.

"11 A.M. Clinico-Pathological Conference. Children's Hospital.

2:30 P.M. Medical Clinic. Dr Christian Peter Bent Brigham Hospital.

4:45 P.M. Surgical Clinic. Children's Hospital Amphitheatre.

"8:15-10 P.M. Massachusetts General Hospital, Clinical Meeting. Massoley Memorial Building.

Friday March 29—

"11 A.M. Clinical Meeting of Children's Medical Staff, Massachusetts General Hospital, Ether Dome.  
 5 P.M. Radio Program—WEEL Cancer Clinic 1934 Cancer Program.

Saturday March 30—

10:15 A.M. Medical Staff Rounds. Dr Christian Peter Bent Brigham Hospital.

Open to the medical profession

Open to Fellows of the Massachusetts Medical Society

March 22—New England Pediatric Society See page 54

March 23—New England Heart Association will meet in the Evans Building of the Massachusetts Memorial Hospitals 83 East Concord Street, Boston at 8:15 P.M.

March 28—Harvard Medical Society See notice elsewhere on this page.

March 28—Clinic at the Peter Bent Brigham Hospital See page 53

March 29—Massachusetts General Hospital, Clinical Meeting See page 54

April 5—International Association for Prevention of Blindness. See page 51.

### MASSACHUSETTS DIETETIC ASSOCIATION

April 9—Tuesday 8 P.M. "Small Hospital Problems," Miss Margaret Copeland Superintendent Free Hospital for Women.

April 12—William Harvey Society Dr Jonathan C. Meakin, President American College of Physicians will speak on "Cardiology During the Past Three Hundred Years—The Legacy of William Harvey"

April 23—The Massachusetts Society for Social Hygiene will meet at the University Club, Boston. For information address Dr E. Granville Crubtree, 99 Commonwealth Avenue Boston.

April 25, 26 and 27—The American Association on Mental Deficiency will meet at the Palmer House, Chicago. For information address the Secretary Dr Groves B. Smith, Godfrey Illinois.

April 29 May 3 1935—The American College of Physician will meet at Philadelphia. For information address Dr E. Loveland, Executive Secretary 133 125 South 34th Street, Philadelphia Pa.

June 1935—Medical Library Association will meet in Rochester, N.Y. For details, address the Secretary Miss Frances N. A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass.

June 11—American Heart Association. The Eleventh Scientific Session will be held from 9:30 A.M. to 5:30 P.M. at the Hotel Claridge Atlantic City N.J. The program will be devoted to various subjects on cardiovascular disease. Gertrude P. Wood Office Secretary 50 West 50th Street, New York, N.Y.

June 12 and 13—Academy of Physical Medicine, Annual Meeting, will be held at the Claridge Hotel Atlantic City N.J. For further details address Arthur H. Ring, M.D. Secretary Treasurer Arlington, Mass.

June 17 to 22—Convention of the Catholic Hospital Association will be held at Creighton University Omaha, Nebraska. For information address the Most Reverend Joseph Francis Rummel, D.D. Bishop of Omaha.

June 22 23 Ira—British National Association for the Prevention of Tuberculosis will be held at Southport, England. Persons desiring further information should write to Miss F. Stickland Secretary of the Association at Tavistock House North, Tavistock Square, London, W.C.1 England.

July 22—Seventh International Congress on Industrial Accidents and Diseases, Brussels, Belgium. The American Committee of the Congress is under the chairmanship of Dr Fred J. Abbott, New York, for the Section on Accidents, and that of Dr Emery R. Hayhurst, Columbus, Ohio, for Industrial Diseases. The American delegation to the Congress will sail from New York on July 8 and visit London Amsterdam, The Hague and Paris, and, optionally, Budapest. Physicians interested in the Congress or in the medical tour in conjunction with it may address the Secretary Dr Richard Kovacs, 1190 Park Avenue New York City.

### DISTRICT MEDICAL SOCIETIES

#### ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Annual Meeting will be held in May Time, place and subject to be announced.

E. S. BAGWELL, M.D., Secretary

exhausted. The blood sugar was 1,290 milligrams, nonprotein nitrogen 136 milligrams per 100 cc and the plasma CO<sub>2</sub>-combining power was 19 volumes per cent. During a period of six hours she was given 510 units of insulin with the result that the blood sugar fell to 420 milligrams. This state might be classified as uremic, hepatic or diabetic acidosis. Without insulin her course would have surely been immediately downward.

**Dyspnea.** During the third week when anasarca was most marked she had nocturnal attacks of dyspnea, described as "asthma". Adrenalin gave some relief.

**Anemia.** The red cells numbered 4,540,000 on July 1. The hemoglobin was 84 per cent. The differential count was as follows: polynuclears 74, lymphocytes 23, large mononuclears 1, basophiles 2, platelets increased, red blood corpuscles—slight achromia. The development of anemia is shown in the following table:

TABLE 2

Date 1934	Hemoglobin	Red Blood Count Millions
July 1	84	4.5
" 11	63	3.6
" 17	62	2.8
" 24	53	2.9
Oct 15	80	4.9

The character of this anemia tended to be hypochromic. The individual cell volume on July 31, was  $9.4 \times 10^{-11}$ . This type of anemia together with the low white blood count gave interesting indications of the disturbance in liver function.

**Renal Function.** Three features influenced renal function. The first was the repeated vomiting due to hepatitis with loss of fluid and diminished kidney output. The nitrogen rose during the first three days to 51 milligrams per 100 cc. This feature was adequately controlled by the administration of liquids but fluid administration did not control the effect of the hepatic toxemia which produced anasarca and nitrogen retention so that the nonprotein nitrogen of the blood reached 136 milligrams on July 5. The third feature was diabetic ketosis which did not seem severe enough at onset to play much part. At the height of anasarca the serum protein was 5.2 per cent and the blood chloride 561 milligrams. Albuminuria was only moderate, recorded usually as a very slight trace or slight trace. Two out of seven specimens showed a few granular casts.

**Treatment.** From the outset of jaundice, ten per cent glucose solution was given intravenously in amounts of 1000 cubic centimeters once daily. In addition subcutaneous administration of 1500 cc normal salt solution containing 75 grams glucose was used so that during two weeks she received a total of from 100 to 170 grams of carbohydrate daily. Hypertonic salt solution (10 per cent) 50 cc and hypertonic glucose solution (20 per cent) 50 cc were given intravenously at the height of her illness. On July 10, Lilly's liver extract, 2 cc given intramuscularly, was begun and continued daily for four days. It was omitted until July 21, when her anasarca having increased so that her weight had reached 116 pounds, the anemia also having increased, it was resumed in doses of 2 cc three times a day. At the same time reduced iron was given. Marked improvement followed so that in three days her weight fell to 104 pounds and urinary output increased accordingly. Insulin was given four times a day except on the day of diabetic coma, the dose varying from 70 units to 58. Her diet at discharge was carbohydrate 159 grams,

protein 71 grams and fat 87 grams. On October 15, 1934 she was apparently well except for diabetes. The liver could barely be felt.

#### DISCUSSION

The diagnosis of acute hepatitis rested in this case upon fever, jaundice, painful swelling of the liver, low white blood count and secondary impairment of kidney function. Although no pathological examination of tissue was made, it is fair to assume that inflammation and edema within the liver involving the bile passages and particularly the intercellular spaces was present and had its effect upon the circulation and upon the various functions of the liver cells. Lichtwitz<sup>1</sup> recently has reviewed the functions of the liver especially in relation to blood supply, discussing them under six headings:

This grouping has been used below in discussing the effect of the hepatitis in the case under consideration.

(1) Transformation of substances (discussed below)

(2) Deposition of substances. The deposition of glycogen is of obvious concern and we may consider that, with the tremendous increase in blood sugar during the period of acidosis, glycogen formation and deposition must have been seriously disturbed, in our case.

(3) Excretion. The height of the bilirubinemia clearly indicated both that bile was formed and that its excretion by way of the intestine was temporarily blocked.

(4) External and internal secretion

(5) Distribution and movement of blood and lymph formation

(6) Detoxication

As regards transformation of substances, in our case only certain processes seem clearly disturbed. Under the transformation of protein substances occurring in the liver, the deamination of amino acids, the formation of urea, destruction of hemoglobin, the synthesis of protein and proteids, the formation of fibrinogen and heparin are included. In jaundice the ammonia content of the blood is increased greatly, indicating disturbed urea formation. Increased excretion of amino acids in the urine occurs. When liver damage continues for days or longer, the kidneys become involved, urinary secretion fails and acidosis is present. In our case although renal evidence of liver damage was severe, no hemorrhages or prolongation of coagulation time or bleeding occurred. The transformation of carbohydrate substances, especially the formation of glycogen from glucose, from amino acid and from fatty acids was presumably much disturbed. With the tremendous swelling of the liver there may have been a distention of the capsule which accounted for the pain and a certain interference with its oxygen supply. In cases where an invasion of

the liver by fibrous tissue as in sclerosis occurs, often a disturbance of the acid base equilibrium develops. In such instances no ketonemia takes place, but in this case with the presence of diabetes, an acidosis brought about by liver disturbance resulted in a severe acidosis without actual ketone bodies in the urine. Possibly the absence of ketone bodies in the urine was due to their retention within the body owing to failure of renal function.

The transformation of lipids in the liver includes destruction of fatty acids, formation of sterols, the hydrolysis of cholesterols and the hydrolysis of fat as well as the formation of bile acids. The remarkable increase in the cholesterol of the blood plasma in this case might be interpreted as in part due to the liver disturbance and in part due to the effect of acidosis upon the diabetes. It must be remembered however, that ketone bodies were not found in the urine after jaundice and severe acidosis began, indicating that the acidosis was not of the ordinary diabetic type. In true diabetic coma an increase in the cholesterol of the plasma is not always present, regardless of the degree of acidosis. Possibly cases of diabetic coma with marked increase in the plasma cholesterol are the cases with predominant disturbance in liver function and should be studied as a separate group.

The value of the determination of cholesterol esters as an indication of impairment of liver function is recognized.

The swelling of the liver was presumably due largely to inflammatory reaction with much edema. Edema of the liver occurs in toxic condition as an anaphylactic shock. In human beings allergic reactions with swelling of the liver and jaundice are not rare. Lichtwitz mentions an unusual case of a girl with sudden fever, urticaria, jaundice and gastro-enteritis. It is striking that in our patient at the height of her illness, attacks of nocturnal dyspnea simulated

true bronchial asthma. In fact, adrenalin was given for its relief.

The division of the different activities of the liver is of great importance in relation to functional tests, and explains the failure of any one test to give satisfactory results in all cases. Certain cases without jaundice show retention of the bromsulphalein dye indicating involvement of the liver parenchyma. Similarly, Minot, from the Mayo Clinic, using the lactic acid tolerance test as an evidence of the liver's ability to form glucose or glycogen from lactic acid found that dogs with sclerosis of the liver could metabolize it almost as readily as normal dogs. However, in dogs with acute jaundice or acute degeneration of the liver this test showed very marked impairment of the function.

Spontaneous hypoglycemia occurred in patients with fatty metamorphosis of the liver reported by Judd, Kepler and Rynearson.<sup>2</sup> In their cases as in acute yellow atrophy a reduction in the amount of functioning liver tissue and a corresponding diminution in the glycogenic function of the liver may be assumed. In our case the complete recovery indicates that the acute infectious process did its damage chiefly by reason of edema and toxic effects without giving evidence of any permanent reduction in the actual amount of liver tissue existing at the present time.

Treatment included glucose solution by vein and subcutaneously, carbohydrate by mouth so far as vomiting permitted, concentrated salt solution to aid urinary secretion and the use of Lilly's liver extract. Bauer has also noted favorable results with liver extract in cases of coma from liver disease. No conclusions as to the efficacy of the liver extract are drawn in this case.

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## A CASE OF GLOMERULONEPHRITIS WITH THREE AZOTEMIC EPISODES\*

BY THEODORE S. EVANS, M.D.†

SLOWLY progressive glomerulonephritis is a condition about which a great deal is known pathologically in the end stages but whose early stages are relatively unknown. The progress of a case of pulmonary tuberculosis can be followed by x-ray examination and sputum tests and a fairly accurate prognosis may be given by an experienced physician after a period of observation, but as yet there are no methods

by which really early renal impairment can be diagnosed or the course followed. That there is a fairly large group of cases who have no demonstrable kidney damage under ordinary conditions but whose renal function is inadequate during periods of stress and that these kidneys suddenly fail was continually emphasized by Rolfe Floyd in his teaching of internes. In these individuals renal function failure may intervene from what seem to be trifling injuries, although a previous careful study may have shown normal urine, nonprotein nitrogen, phenolphthalein Ambard and Van Slyke tests. Too

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frequently surgical cases die of renal failure in the postoperative course when the surgical condition is doing well. Some of these are due to circulatory collapse and consequent inability of the kidney to secrete urine, but some are undoubtedly cases of progressive glomerulonephritis.

If the renal margin of safety of a patient is accidentally discovered to be very small by reason of one of these breakdowns, one of two things is pretty sure to happen. Either the patient will die at the time, or if he recovers, he will be protected meticulously from any future event which might cause the same reaction. In the case here reported the functional margin of safety was very narrow and on three occasions renal failure with azotemia was apparently precipitated by self-imposed insults to the kidney and consequent circulatory collapse. Two of these episodes yielded to raising of the blood pressure by forcing fluids and consequent re-establishment of function. The periods of well-being, which followed in one instance for one year and in the other for five years, represent a picture in which the renal tissue was mildly damaged but able to carry on ordinary bodily needs, however, when an unusually heavy load was put upon it, failure resulted. By the time of the third attack the cortex was so badly injured that recovery was impossible.

#### CASE REPORT

J. W., a married white female of sixty three years entered the Grace Hospital, New Haven, Conn., on November 17, 1933 and died November 20, 1933.

On November 6, 1927 she had been admitted to the New Haven Hospital on the service of Dr. Francis Blake. Her major complaint at that time was vomiting which had been present for about six years but which had been gradually increasing until in the last two weeks she had retained practically no food or even water. In addition to the vomiting she had complained of diarrhea and pain in the abdomen over a long period and headache and extreme weakness for the last two weeks. C.R. and G.U. history was negative. Past and family histories were irrelevant.

It was later discovered that the patient had periods of depression when she felt that someone was poisoning the food and she would not eat anything or even drink water during these times. Apparently each of the uremic episodes started in this manner.

P.X. Temperature and pulse were normal throughout B.P. 104/75 on admission.

A summary of Dr. Blake's findings and diagnosis at this time was as follows. The woman is emaciated and the skin dry. The tongue is dry and "beefy". Otherwise the physical examination is practically negative. Diagnosis: starvation, malnutrition, bone tumor at site of injury to right arm (callus formation), azotemia and psychoneurosis.

Laboratory Findings: Wassermann, negative, stools, negative, gastric series, negative. Hgb 100 per cent, R.B.C. 5,000,000, W.B.C. 14,500, Polys, 82 per cent. Serum protein 5.45 per cent, serum globulin 1.59 per cent, serum albumin, 3.45 per cent.

	<i>Urine</i>	<i>Blood Chemistry</i>
November 6—S G 1 003	Alb Heavy trace (with granular casts)	Blood N.P.N 158
November 11—S G 1 017	Alb None No casts	Blood N.P.N 34

<i>Treatment</i>	<i>Forced fluids</i>	<i>Date</i>	<i>Intake</i>	<i>Effect on Urine</i>	<i>Blood Output</i>
November 6—Mouth, 1,000 cc	Hypodermic and intravenous, 4,500 cc		260 cc	158	
November 7—Mouth, 3,280 cc	H & I, 3,000 cc		760 cc		
November 8 to November 11—Average 3,700 cc daily by mouth					
November 11—					34

In April, 1928, she was re-admitted to the New Haven Hospital with the same complaints as previously, but on this occasion they were not so severe. No new physical findings were made at this time. The Hg was 98 per cent, R.B.C. 5,000,000, W.B.C. 7,600, Polys, 78 per cent. Urine showed a very faint trace of albumin. N.P.N. was not done. B.P. 111/75. Colon enema showed some evidence of colitis. The same diagnoses were made as before—but colitis was added.

She was re-admitted again on July 17, 1928. The complaints were the same as on her previous admissions. Physical examination revealed the same conditions as before. The B.P. was 104/75.

Laboratory findings: Hgb 80 per cent, R.B.C. 4,600,000, W.B.C. 7,500, Polys 70 per cent.

<i>Date</i>	<i>Urine</i>	<i>Alb</i>	<i>Microscopic</i>	<i>Blood Chemistry</i>
July 17	1 012	H T	Granular casts	173
July 25				35
July 26	1 015	0	Negative	23

<i>Treatment</i>	<i>Forced fluids</i>	<i>Intake</i>	<i>Urine and Effect on Blood Chemistry</i>
July 17	Mouth, 1,000 cc	300 cc	173
July 18	Mouth, 3,000 cc	160 cc plus	
July 21	Mouth, 3,700 cc		
	Hypodermic, 3,000 cc	3,000 cc	
July 22	3,600 cc	3,700 cc	35
July 26			23

The diagnosis was the same as before.

After these three admissions to the New Haven Hospital the patient remained well for a period of six years from the first illness. During this time she felt well and had no symptoms of any kind unless she was careless about her diet and then she had had some pain and diarrhea referable to the colitis. There was nothing that could be interpreted as cardiorenal in origin.

She was admitted to Grace Hospital on November 17 1933.

She had been refusing to eat anything for about two weeks and had taken very little water. She complained of anorexia, nausea, vomiting and diarrhea which had gradually been increasing over a period of three months. Pain in the abdomen had become more severe. She stated that she had lost seventy-five pounds in the last year but the family were sure that the loss of weight had not been nearly so great. During the twenty-four hours previous to admission she had had involuntary muscular twitchings. Even at this time there were no urinary symptoms.

Physical examination showed an emaciated woman with a very dry skin and a urinous breath. There was marked involuntary twitching of the muscles. The tongue was dry and the mucous membranes pallid.

On admission the pupils reacted to light and accommodation, but shortly after failed to react.

The eye grounds showed slight arteriosclerosis but no old or recent hemorrhages. The heart, lungs, breasts, and abdomen were negative. There were a few badly neglected teeth that showed caries. There was a large callus formation on the right arm at the site of an old fracture. The reflexes were all exaggerated and clonus was present in the calves. Rectal examination was negative. Vaginal examination showed an atrophic vagina and uterus. Blood pressure was 120/90.

A diagnosis of impending uremic coma was made and this seemed to be substantiated by finding albumin and casts in the urine and a blood N.P.N. of 60 mg.

A poor prognosis was given the family who then volunteered the history of the previous episodes. In spite of this information the prognosis seemed very grave.

Fluids were given intravenously and by mouth in large amounts, but in spite of all that could be done the patient went into coma at noon on November 18, when her blood N.P.N. was found to be 109 mg. The blood pressure dropped steadily and she passed only a very little urine. We continued to force fluids until night when edema of the legs developed. After that it did not seem reasonable to give more

intravenous fluid. The blood N.P.N. at this time was 100 mg. and the creatinin 4.6 mg.

On the night of November 18 a consultation was held with Dr James Fox who had seen her when she was ill in 1927. He agreed with all the physical findings and considered the possibility that the general collapse might be due to starvation and an extreme degree of vitamin deficiency. For this reason liver extract was given parenterally but no improvement was noted.

Dr Francis Blanke was kind enough to see the patient in consultation and he checked all the findings. He agreed with the diagnosis and suggested that possibly the serum protein was low and that therefore the intravenous fluid could not be utilized. He considered that transfusion might raise the blood proteins sufficiently to allow the absorption of the edematous fluid. The blood chemistry showed Serum protein albumin 6.77 per cent. Transfusion proved of no value and the patient died the following morning.

Laboratory findings Wassermann, negative Blood Count. Hgb 50 per cent R.B.C. 3,600,000 W.B.C. 6,000 Polys 69 per cent Lymph 27 per cent Monos. 4 per cent Stools showed no blood ova or parasites but a moderate amount of pus.

Date	Sp G	Alb	Urine		Blood Chemistry		
			Microscopic	N.P.N.	Sugar	Rum	Alb
November 17	1.010	Heavy trace	W.B.C. many	60	83		
			R.B.C. occ.				
November 18	1.020	Heavy trace	Many casts	100			
			R.B.C. & W.B.C				
November 19		No urine passed		100	Creat. 4.6		
November 20		No urine passed		230			

#### Treatment Forced fluids.

#### Effect on Urine and Blood Chemistry and Blood Pressure

Output	Blood Pr	N.P.N.	Creat.	S. Al
November 17 Mouth 2,500 cc. Intravenous 1,500 cc.	120/90 100/70	60 109		
November 18 Mouth 300 cc. Intravenous 3,000 cc.	Very little			
November 19 Intravenous 5,000 cc. November 20 1,000 cc.	None "	90/50 ?	100 230	4.6 6.77%

The clinical diagnosis was as follows:

Chronic Nephritis  
Psychoneurosis Resulting in Malnutrition and Starvation  
Colitis  
Hypotension  
Azotemia  
Mild Arterial Degeneration  
Callus at Site of Old Fracture of Right Humerus.

#### AUTOPSI

Patient J. W., aged sixtythree November 20 1933 10:00 A.M.

Body that of a rather small woman, poorly nourished. Body length 161 cm. Only a slight amount of postmortem rigidity and lividity present. The veins of the right leg below the knee were somewhat tortuous. No edema of ankles. There was a callus of an old fracture of the right arm.

Left lung generally adherent by old adhesions. Heart rather small weight 250 grams. Left ven-

half months, about half the average delay shown by an equal number of patients with cancer of the breast who visited the clinic during the same period of time. This relative promptness was probably due to the higher incidence of pain in the benign group, 43 per cent as opposed to 19 per cent among the patients with cancer.

#### SYMPTOMS

Pain, tenderness, or both was the outstanding complaint in about half, and in the other half it was the discovery of a lump in the breast which brought the patient to the clinic. The pain was variously described as "drawing, shooting, radiating, aching, fullness, tightness, and soreness" and varied in intensity from almost nothing to a severe pain which was a real disability. The tenderness in some cases was so marked that the patient could not roll over in bed. Of the patients from whom the relation of symptoms to catamenia was learned, 70 per cent described a definite relationship and 30 per cent a definite lack of relationship.

#### PHYSICAL FINDINGS

Since no case with findings suggestive of neoplasm or infection is included in this study we are left essentially with lumpiness of the gland tissue as the only objective manifestation. Practically all of these breasts showed gross lumpiness, either diffuse, localized or limited to a single lump, and ranging in degree from cases in which the breast felt like a bag of walnuts to those in which the gland tissue was palpable but within the probable limits of normality. For convenience of description the consistency of the breast tissue is reduced to a fairly simple classification, illustrated in table 1, which

TABLE 1  
PHYSICAL FINDINGS IN 177 CASES CLINICALLY  
DIAGNOSED "CHRONIC CYSTIC MASTITIS"

Diffuse, shotty or granular	39
Localized, shotty or granular	2
Diffuse, lobular or nodular	72
Localized, lobular or nodular	12
Single lump or mass	38
Brawny induration	1
"Normal" breast tissue	1
Not described	12
Total	177

also gives the distribution of findings in the 177 cases of this series. The commonest finding is diffuse lobular or nodular gland tissue.

The discrepancy between the localization of symptoms and the site of the abnormal physical findings is very striking and characteristic. Of the first sixty-four patients mentioned above, 86 per cent had unilateral symptoms, but the findings proved to be bilateral in all but twenty-

eight cases. In a similar number of patients with cancer of the breast, both symptoms and signs were unilateral in every case.

#### MANAGEMENT

The extreme diversity of opinion regarding the relationship of benign breast changes to cancer, existing not only among clinicians but among pathologists as well, has already been mentioned. In the face of this uncertainty, biopsy becomes of questionable value. At present the only operative procedure which removes the danger of cancer is complete removal of the breast tissue. (The discussion of such measures as treatment by x-ray, etc., is not within the scope of this paper.) So long as breast tissue suspected of being premalignant remains, it would appear necessary to keep the patient under observation. Thus, an active clinic is faced with the alternative of doing many unnecessary mutilating operations or of assuming a constantly increasing load.

#### OPERATION

In table 2 it will be seen that operative measures were advised in sixty-one cases, accepted in all but eight, and carried out with reasonably good immediate results in fifty-three. Of these sixty-one patients, all but thirteen are, or perhaps should be, still under observation because of the threat of cancer.

The chief indications for operation were as follows: (1) increase in lumpiness, (2) intractable pain, and (3) presence of a circumscribed area of disease in an otherwise normal breast.

#### PATHOLOGIC FINDINGS

In table 3 the pathologic findings are listed according to their distribution among the clinical types of breast tissue on which the fifty-three operations were done. The majority of operations were done for single lumps, but lumps not sufficiently well-defined to be interpreted clinically as adenofibroma, large single cyst, or cancer.

The danger of relying on clinical diagnosis alone is suggested by the finding of cancer in four instances.

The piling-up of epithelial cells in papillary formations within the ducts is considered by some observers to be the step which precedes penetration of the basal layer seen in actual cancer. This appearance was found in sixteen instances.

Hyperplasia of the epithelium lining the ducts, the interpretation of which is also still in dispute, was found in thirty-two instances.

We are not prepared to say which, if any, of these microscopic appearances may be associated with the later development of cancer. We wish here only to point out that their presence, and even the presence of actual cancer, cannot al-

ways be detected by simple physical examination.

#### NOTHING ADVISED

Fifteen patients (table 2) were advised that no treatment or observation was necessary. In

The pregnant patient gave a typical story of mazoplasia of two years' duration, and at her first visit had already skipped one menstrual period. On her return six weeks later the uterus was the size of a three and one-half months' pregnancy, there were no breast symptoms, and

TABLE 2  
MANAGEMENT OF 177 CASES CLINICALLY DIAGNOSED  
CHRONIC CYSTIC MASTITIS\*

Management				Progress				Cooperation	
				Better	Unchanged	Worse	Progress unknown	Made return visits	No return visits
Local excision done	31	23	3	1	5	1	1	26	5
(Advised but not done)	8	1							2
Simple amputation unilateral done	13	12		1*				13	3
Simple amputation bilateral done	4	4						4	4
(Advised but not done)	5	1	1	3		3	2	3	
Radical amputation done	5	3		1†	1		4	1	
Totals	61	43	4	4	10			61	10
No treatment or observation advised	15	1	3		11			4	11
Observation advised	45	11	14	1	19			26	19
Observation and brassiere advised	24	8	7	3	6			18	6
Totals	69	19	21	4	46			44	25
Endocrine treatment given	32	19	5	1	7			33	
Grand total	177	83	33	9	53			131	46
						Cancer in other breast.			
						†Died cancer.			

TABLE 3  
CORRELATION OF PHYSICAL AND PATHOLOGIC FINDINGS IN 53 CASES CLINICALLY DIAGNOSED  
"CHRONIC CYSTIC MASTITIS"

Physical Findings in 53 Operated Cases Clinically Diagnosed "Chronic Cystic Mastitis"	Cancer in otherwise normal breast tissue	Pathologic Findings							
		Cancer with cysts and epithelial hyperplasia	Cysts, epithelial hyperplasia and intraductal papilloma	Cysts proliferative and desquamative epithelium	Epithelial hyperplasia	Periductal infiltration and epithelial hyperplasia	Adenoductoma with periductal infiltration and epithelial hyperplasia	Adenoductoma in otherwise normal breast tissue	Totals
Diffuse lobular		5	8	2	2	1	1	1	18
Single lump	1	3	11	9	3	12	3	1	33
Diffuse shotty				1	1	1			3
Totals	1	3	16	17	6	5	4	1	53

spite of this advice four patients insisted on remaining under observation, one showing complete recession of signs and symptoms coincident with pregnancy, and the other three continuing to complain of symptoms.

the diffuse lumpiness which was noted at the first visit had completely disappeared. Similar observations were made in the case of a patient who had been under observation for three years when the signs and symptoms of mazo-

plasia disappeared during the fourth month of pregnancy, after having been worse during the first three months.

These two cases suggest the association of the breast changes described as mazoplasia with excess corpus luteum influence, inasmuch as the hormone progestin has been shown to be at its highest level during the first few months of pregnancy when estrin is known to be at a low level. The disappearance of breast symptoms in these cases would thus correspond with the rise in estrin and the concomitant weakening of the corpus luteum influence.

#### OBSERVATION

Sixty-nine patients (table 2) were advised to return periodically for observation. In some cases in which the weight of heavy breasts was thought to be a possible factor, the patient was advised to wear a supporting brassiere. Although nineteen patients reported some degree of symptomatic improvement, only six cases were officially closed, one of them being that of the pregnant patient mentioned above.

Contrary to the advice given them, twenty-five patients made no return visits at all, and fourteen patients declined to remain longer under observation. Thus the attempt to keep untreated patients under observation failed more often than it succeeded. This becomes more significant when it is realized that each of the delinquent patients was sent for repeatedly, some by personal visits of a social worker, and all by letter.

It is fair to conclude from this experience that any program of management which offers the patient nothing more than observation visits over a long period of time demands an unreasonably high degree of coöperation and fails of practical success.

There are additional factors which make prolonged observation without treatment undesirable. Three patients in this group developed neuroses during the period of observation; one was a thirty-seven year old woman who had recently been told that a lump which was excised from her breast ten years before might come back. Three weeks later she began to have a sense of fulness in the left breast. On examination there was diffuse coarse nodularity of both breasts. She was advised to return at three month intervals. On her second visit the breast condition was unchanged, but she was obsessed with the idea that her lungs were full of cancer, and she described attacks of suffocation which she ascribed to this cause. Thorough physical examination revealed no organic basis for her symptoms. She was given emphatic reassurance but has not returned or replied to enquiries for three years.

A thirty-one year old married woman who had been reading about cancer since her sis-

ter's operation became conscious of soreness in the left breast. Examination showed bilateral mild diffuse nodularity. She was reassured and asked to return in six months. When this visit was two months overdue, the social worker called and found her suffering from a "nervous breakdown." There had been no breast symptoms since her visit to the clinic, but she refused to return for examination.

A married woman of forty-four, of a neurotic temperament, had undergone radical operation for cancer of the right breast three years before. During convalescence her local doctor is said to have told her that she had pain in the legs because she was "still full of cancer." On the development of lumps in the remaining breast, eventually treated by simple amputation and shown to be cystic disease, she developed mental symptoms, and at present is a helpless nervous invalid with no evidence of malignant disease.

These are extreme examples, but the emotional factor is undoubtedly present to some degree in all cases and must be taken into account. Many patients with the dread of cancer demand a more positive form of reassurance than is afforded by an indefinite period of being kept under observation.

The last group of thirty-two patients shown in table 2 were given endocrine medication for a purpose which will be discussed presently. All of them returned as requested for examination, presumably because they, like the patients who had operative procedures, felt that something was being done for them.

#### ENDOCRINE THERAPY AS A DIAGNOSTIC AID

Although the exact mechanism remains to be determined, it now appears certain that an important relationship exists between benign breast changes and the endocrine system. The current conception is, briefly, that functional breast changes (mazoplasia of Cutler and Cheatle) are brought about by a dominating corpus luteum influence due either to an excess of progestin or a deficiency of estrin.

If for practical purposes we may assume that in cases which respond to appropriate endocrine therapy there remains no question of premalignancy and hence no need for operation or prolonged observation, then we have a valuable diagnostic agent whose use would greatly simplify the management of benign breast conditions. At present we feel justified in acting on this assumption only when the response is objective as well as subjective, that is, when the breast tissue returns to its normal consistency as a result of medication.

In the short series of cases shown in table 4 we have purposely adopted very rigid criteria for measuring improvement. The patients are

asked no leading questions but allowed to volunteer information about any changes they may have observed. The breasts are carefully examined and the findings compared with detailed notes of the previous examination. Unless the improvement is unmistakable, the result is classified as doubtful.

#### MEDICATION AND DOSAGE

For the purposes of this study it was thought desirable to use a substance which (1) contained the female follicular sex hormone estrin without the corpus luteum hormone progestin (2) would

three months when she would return for examination. If the subjective and objective relief was found to be complete, medication was stopped and the case was closed. If the result was inconclusive, another three months' trial was started, using the other product. If this also failed to be conclusive medication was discontinued and operation was advised, provided the indications were sufficient to warrant it.

#### EFFECTIVENESS

Reference to table 4 suggests that these small doses are effective. The large number of treated

TABLE 4  
COMPARISON OF TREATED AND UNTREATED GROUPS

	Symptoms Improved	Not Improved	Findings Improved	Not Improved
20 cases showing relation to cta. (average age 34.4 years)	18	2	14	6
5 cases showing no relation to cta. (average age 48.6 years)	1	4	2	3
<b>25 treated cases</b>	<b>19</b>	<b>6</b>	<b>16</b>	<b>9</b>
<i>25 Untreated Cases</i>				
	Symptoms Improved	Not Improved	Findings Improved	Not Improved
17 cases showing relation to cta. (average age 36.5 years)	4	13	3	14
8 cases showing no relation to cta. (average age 38.2 years)	1	7	1	7
<b>25 control cases</b>	<b>5</b>	<b>20</b>	<b>4</b>	<b>21</b>

be effective by mouth in small doses, and, (3) would not be too expensive to supply to a number of patients. The products used were Ovarian Residue (Wilson) and the oral preparation of Progynon (Schering) both kindly supplied to us by the manufacturers. Ovarian Residue is an extract of whole ovarian substance minus the corpus luteum hormone progestin. Progynon is the follicular hormone, estrin.

In the absence of certain knowledge concerning the effect of these preparations on the human mechanism over a long period, we have not felt justified in using large doses or in prolonging the medication beyond six months. Both substances were necessarily given by mouth, since the patients could not return to the clinic daily. Medication was given only for the ten days preceding each menstrual period over an interval of three months. The dosage used was Ovarian Residue, 1 capsule (5 grains) t.i.d., or Progynon, 1 tablet (45 Allen Doisy rat units) t.i.d.

The procedure has been to supply the patient with enough of one or the other product to last

patients showing unmistakable improvement is significant when compared with the small number of patients in the control group showing spontaneous improvement. Ten of the treated patients had been followed for from one to four years before treatment, returning regular because of the constant presence of symptoms. Of this particular group to date six have shown complete relief, one partial relief, and one an exacerbation of symptoms coincident with treatment.

Ovarian Residue and Progynon have so far been used in about an equal number of cases with almost equal effectiveness. In a few cases Progynon has seemed to succeed after Ovarian Residue had failed, but it would be unfair to ascribe to one product an effect which may have resulted from the action of both.

The majority of patients who were improved reported little or no relief after one month of medication, and in a few there was no response even after two months. Several patients, however, described rather prompt effects. One patient reported cramp like abdominal pains and relief of breast symptoms in only ten days.

of medication. The following month she herself reduced the dosage to one-third with partial recurrence of breast symptoms but no abdominal pains. The third month, however, on the reduced dosage, the breast symptoms returned with their original severity. The patient was then advised to take the prescribed dose, following which there was relief of breast symptoms and no further abdominal pain. The presence of ovarian disease has been proved by operation in at least nine of the cases in our series and on the basis of pelvic examination it was suspected in several others.

The responsiveness to medication of those twenty patients whose breast symptoms were associated with menstruation is pointed out in table 4. Before treatment fourteen described their periods as scanty, one as scanty and irregular, one as irregular, and four as normal. Eight have now reported that since taking medication their periods have become more regular, more profuse, and more prolonged. One patient volunteered the information that it was the first time her periods had ever been regular. In all eight of these cases there was complete relief of breast symptoms and disappearance of lumps from the breasts.

Of the five treated patients whose breast changes were unrelated to catamenia the periods were described as normal by three. Menstruation was absent in the other two cases through artificial or natural menopause. Four of these patients were not responsive to medication, one was made definitely worse by it.

#### INTERPRETATION

In interpreting these results, it is necessary to bear in mind the purpose for which the test is being used, namely, the elimination from the clinic of those cases in which there are no reasonable grounds for the suspicion of precancerous lesions. We are assuming that complete disappearance of lumps from the breast warrants our belief that no precancerous lesion is present. On this basis we are reducing the number of suspicious cases by more than half. (The subsequent treatment and permanent cure of patients who present no question of premalignancy is outside the scope of this paper.)

A partial or total failure to respond to medication, however, cannot be taken as indicating the presence of a precancerous lesion, but neither does it indicate its absence. Such a result may equally well be due to inadequate treatment of a purely functional condition or to the presence in the breast of progressive organic changes. What advice to give the patients remaining in this group will be a difficult problem until pathologists agree on what constitutes a precancerous lesion of the breast. In the meantime we believe that operation, either

thorough local excision or simple mastectomy, dismissing the patient with a clean bill of health so far as cancer is concerned, is better than prolonged observation without treatment.

#### CONCLUSIONS

- 1 Until it shall be proved to the contrary, we must act on the assumption that some of the clinically benign breast changes often loosely referred to as chronic cystic mastitis are or may become precancerous.
- 2 Innocent breast changes cannot be distinguished from precancerous lesions by their clinical characteristics alone.
- 3 The test of long clinical observation is neither safe nor effective.
- 4 Thorough removal of suspected breast tissue is safe and effective, but the accompanying mutilation of the patient is not always justifiable.
- 5 More than half of the patients clinically suspected of having precancerous lesions will respond to appropriate endocrine therapy by a temporary disappearance of signs and symptoms.
- 6 We are justified in accepting such a response as evidence that no premalignant lesion is present.
- 7 Lacking such evidence, and in the face of increasing lumpiness, intractable pain or easily resectable lesions, we are justified in advising operation as preferable to prolonged observation.

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## AN EXPOSITION OF THE PREPARATION AND ADMINISTRATION OF AMNIOTIC FLUID CONCENTRATE

BY HERBERT LESTER JOHNSON, M.D. †

IN 1927<sup>1</sup>, the author reported observations on a series of clinical cases and laboratory animals in which human or bovine amniotic fluid was used to stimulate the defense repair mechanism of the peritoneum. While the clinical evidence was obtained entirely from cesarean cases, sufficient proof of the efficacy of this method of inducing peritoneal immunity was apparent to warrant its application to a wider field of abdominal surgery. To accomplish this extended application, it was necessary to establish a dependable source of supply of whole amniotic fluid and a method of purification which would render its use as a stimulator of peritoneal immunity safe beyond question.

The cow was selected as the most available and abundant source of supply. Among the heavy western range cattle assigned to the slaughter houses, about one cow in every five is in calf. After inspection by government agents uteri, two to five months pregnant, are selected from approved animals. The amniotic fluid at this early period is especially pure and free from extraneous substances such as vernix caseosa, hair and mucus. There is no need to fear contamination of the amniotic fluid by the calf's urine since the bladder of the calf is connected directly to the outer or allantoic sac, by the urachus. This fact alone removes the objection of many clinicians to the use of this substance.

With the assistance of the Scientific Staff of the Lilly Research Laboratories, a purified stable, isotonic concentrate of amniotic fluid was prepared. By a process of fractionation, certain proteins, albumins, lipoids and other potentially harmful substances were removed making the end product practically innocuous. It is this product which we have used in our clinical and experimental work for the past seven years.\*

The normal peritoneum responds to trauma, infection, chemical irritation, etc., by the production of a defense exudate. The character of this exudate will depend largely on the nature of the substance introduced. Such a reaction is in conformity with the law that "to a stimulus the living being responds by a reaction which tends to neutralize the effect of the stimulation." If the peritoneal invasion be bacterial in nature, an attempt will be made to localize the process, destroy the bacteria, neutralize their toxins and restore the field to normal through the process of resolution. In the case of aseptic trauma, the response is chiefly an effort to resolve injured tissue and protect denuded serous surfaces. In the presence of a vigorous, primary, peritoneal response, sufficient fibrin and lytic ferment are present to accomplish speedy complete resolution thus avoiding a large amount of adhesion formation. All too often, in the absence of a heavy fibrinous deposit, this protection is accomplished by the healing of one denuded surface to another with resulting dense adhesions. Where the substance introduced is an irritating chemical, the peritoneal reaction is more in the nature of a transudate and appears to be an attempt to dilute and neutralize the irritating effect of the chemical.

The peritoneal exudate produced in response to infection, whether extensive surgical trauma be present or not, is usually rich in white cells, fibrin, antibodies, opsonins, lytic ferment and, presumably, many other unknown elements which influence the processes of defense and repair. Unfortunately, by the time this normal reaction is present in force, the infection has gained such headway that it is difficult to stop and the outcome is frequently fatal. This is especially true if infection occurs in the presence of extensive trauma or an irritating chemical substance. Also, in the case of chemical irritation, the excessive amount of transudate prevents localization and permits the peritonitis to become generalized.

It follows then, that any harmless substance, capable of inducing the early production of a peritoneal exudate, similar in character to that produced in response to infection, may well be employed to mobilize the defense mechanism of the peritoneum in anticipation of the possible development of infection. Furthermore, since this type of exudate is usually rich in fibrin, lytic ferment and phagocytic cells, early protection of injured surfaces is afforded and resolution is much more active and complete. In this manner, the incidence of postoperative adhesions is markedly reduced.

Such is the action of amniotic fluid concentrate on the peritoneum. These results may be accomplished when this agent is introduced on closing the abdomen at the completion of the operative procedure, or when introduced eight to twelve hours preoperatively as a special precaution in cases of anticipated operative contamination.

Many clinicians are confused as to the relative merits of operative and preoperative introduction of this agent. Previous to Young's work<sup>2</sup> on preoperative instillation in colon re-

Grateful acknowledgment is made to the Eli Lilly Company for a generous supply of their commercial Amniotic Fluid concentrate, Amfetin, which has greatly facilitated the carrying out of this work.

Johnson, Herbert Lester—Courtesy Staff, Faulkner and St. Margaret's Hospitals. For record and address of author see "This Week's Issue," page 62.

section, all cases received the concentrate at the close of the operation. The speed with which the reaction to this substance reaches its optimum makes operative introduction adaptable for routine use. In selected cases, however, such as colon resection, panhysterectomy, etc., where contamination of the peritoneum is anticipated, additional protection may be gained by preoperative instillation. In this manner, mobilization of the local defense mechanism is accomplished before opening the abdomen.

Our knowledge of the probable mode of action of this agent is based upon observations on clinical cases and laboratory animals over a period of twelve years. While the early exudate pictures in peritoneal stimulation and irritation may be somewhat similar, they must not be confused in their immediate and remote effects. In the experimental animal, at least, there seems to be a stimulation threshold beyond which one cannot go without causing irritation. The level of this threshold shows a wide individual variation. For instance, the exudate which usually comes down in response to stimulation by amniotic fluid concentrate is faintly pink in color showing the presence of very few red blood cells or desquamated mesothelium. In a certain number of animals, however, in which this agent was employed, a more hemorrhagic type of exudate was induced by the standard dose. It may be assumed that these animals had a low stimulation threshold which was slightly overstepped by the usual dose of this product but, at no time, was a heavy hemorrhagic exudate noted in response to the use of amniotic fluid concentrate. This same variability was noted even in the use of normal saline solution, the mildest of all the peritoneal stimulants.

In the case of the more vigorous stimulants, such as bacterial vaccines or chemicals, a hemorrhagic exudate is the rule. Roughly, one may take the amount of hemorrhage in the exudate as a measure of the extent of peritoneal irritation where no other source of hemorrhage can be found. If we consider the clinical picture in conjunction with our local observations, we get an even more accurate estimate of the irritating effect of a given agent. Pain, anorexia, malaise and a sustained high white count, both local and general, are suggestive evidence of peritoneal irritation.

That this irritation does not always destroy the ultimate protective effect of the primary stimulation is evidenced by the end results in the use of the bacterial vaccines<sup>3</sup>. One notes, however, at the end of the immunizing interval, where bacterial vaccines are used, that the exudate shows a marked preponderance of large wandering cells, so-called histiocytes or macrophages. These cells are attracted chiefly by the chemiotactic effect of dead tissue and their presence, in large numbers, usually marks the stage of resolution.

Amniotic fluid concentrate is intended primarily for use in the peritoneal cavity. In this field only, have we accumulated sufficient data to establish its value as a stimulator of local immunity and repair. In a small number of clinical and laboratory cases its use in the pleural and joint cavities has shown it to be highly effective as a stimulator of the defense repair mechanism. The topical application of this agent to areas of extensive trauma occupies the same status as its use in joints and the pleural cavities. Experimental and clinical trial will be continued in these fields with a view to reporting upon our observations at a later date.

In the case of colon resection, where the post-operative mortality from peritonitis is usually quite high, the preoperative introduction of 100 cc of the concentrate, eight to twelve hours before operation, gives additional protection by providing an optimum peritoneal reaction at the time that infection is likely to take place through operative contamination.

The immediate postoperative convalescence of a patient in whom amniotic fluid concentrate has been used, operatively or preoperatively, is characterized by early cessation of nausea and vomiting, lack of abdominal distention, prompt resumption of peristalsis, and early disappearance of local tenderness and pain. Adynamic ileus is seen only in cases of exceptionally severe peritoneal trauma and then in a much milder degree than in the untreated cases.

The amount of amniotic fluid concentrate to be used in each case depends upon the type and severity of the operation and the size of the abdomen to be treated. For operative introduction, the dosage ranges from 25 or 50 cc in children to 300 cc or more in the adult. Kimp-ton<sup>4</sup> reported a case in which he used 500 cc with excellent results. Any dose above this amount is unnecessary and may cause harm from sudden, increased intra-abdominal pressure. In simple cases of abdominal surgery, where the procedure is definitely localized, such as appendectomy, oophorectomy, etc., 100 cc is usually sufficient. In more extensive operations, such as hysterectomy, cesarean section, bilateral salpingectomy, enterostomy, bowel resection, etc., the use of 200 to 300 cc is indicated. In the case of cholecystectomy, where routine drainage is employed, it will be found that any amount in excess of 75 to 100 cc will return around the drain. Where the method of preoperative instillation is to be employed, the dosage is smaller and varies little. This technique is reserved for cases where the postoperative mortality from peritonitis is notoriously high. In such instances, 50 to 100 cc of the concentrate is introduced eight to twelve hours before operation.

Amniotic fluid concentrate, in the original containers, should be immersed in alcohol for at least thirty minutes before use. The full,

unopened containers are passed to the sterile nurse just as one would handle suture tubes. The process of opening the container is thus carried out under a rigid aseptic technique. The quantity selected for use in the case at hand is poured into a wide mouthed metal or glass container which is partly immersed in a warm water bath. In this manner, the temperature of the concentrate can be raised to a point slightly above that of the body before being introduced. This technique is common to both operative and preoperative instillation.

If the case is to receive preoperative immunization a site to the left and slightly above the level of the umbilicus is selected and the usual process of skin sterilization applied. Local anesthesia is injected into the skin and along the proposed route of the intraperitoneal trocar.\* In the event that this latter instrument is not available, an 18 or 20 gauge spinal needle may be used. In the introduction of trocar or needle, care must be exercised not to introduce the instrument beyond the point of entering the peritoneal cavity. Where the needle is used every caution must be taken not to lean on the plunger of the syringe during introduction. Otherwise, the needle may be unconsciously pushed deeper into the abdomen and cause visceral puncture. Where the trocar is used an adjustable shield helps to protect against such an accident.

The warm fluid should be introduced slowly to allow plenty of time for dissemination by the respiratory excursions of the diaphragm. In this way the distress of local accumulation may be avoided. Where the concentrate is to be introduced at the close of the operation the tip of a small soft rubber catheter is introduced through the aperture of the final peritoneal stitch and a single knot of the suture pulled snugly around it. The selected quantity of the agent is introduced through the catheter by means of a large syringe. The catheter is then cautiously withdrawn and the knot tied quickly to avoid waste of the material by spilling. The abdominal wall is closed in the usual manner. In cases where routine drainage

A special intraperitoneal trocar has been devised for this purpose with a view to making safety and convenience of introduction paramount. It will soon be available under the name of: Faulkner Intra-peritoneal Trocar.

is employed, such as cholecystectomy, the catheter may be introduced beside the drain and the wound completely closed around both before introducing the fluid. If instillation is done slowly, allowing for dissemination by respiratory excursions, a fair amount (75 to 100 cc) can be injected before it begins to well up around the drain. Instillation beyond this point merely wastes the product.

#### SUMMARY

The source and preparation of amniotic fluid concentrate give assurance of its purity and safety of use.

Its action on the peritoneum is to stimulate the production of a defense exudate similar to that laid down in the presence of infection. In this manner, it accomplishes an early peritoneal immunity, giving a maximum of protection with a minimum of physiological disturbance.

Its use is especially indicated in surgical procedures of the peritoneal cavity involving widespread trauma or contamination.

Operative introduction may be practiced routinely in all primarily clean cases of abdominal surgery. Preoperative instillation is usually reserved for cases which are reputed to have a high mortality from postoperative peritonitis.

Dosage ranges from 50 cc. to 300 cc. depending upon the method of introduction, the nature and severity of the surgical procedure and the size of the abdomen. The dosage for preoperative instillation is 50 to 100 cc eight to twelve hours before operation. An intraperitoneal trocar or spinal needle (18 to 20 gauge) may be used to accomplish preoperative instillation.

This communication is offered as a brief exposition of the source, preparation, action and indications for use of amniotic fluid concentrate and to assist in establishing a better understanding of the basic principles of peritoneal immunization.

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## YOUR PROFESSION AND SOCIETY\*

BY JOHN A. HARTWELL, M.D.<sup>†</sup>

**I**F I fail in presenting to you this evening some thing that is worthy of your consideration, you must place the blame upon Dr. Cutler. He is possessed of a personality of such charm and such persuasiveness, accompanied by the gift

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of subtle flattery, that it was against my better judgment when I finally accepted his invitation to talk to you on this occasion. He held out several reasons as to why this should be an easy thing for me to do and told me of the things that I know which you would enjoy hearing, until finally I succumbed and now find myself before you.

That, however, was some months ago when

the actual moment seemed so far away that I could contemplate it with a certain amount of equanimity. As the months lessened into weeks and the weeks into days, before the actual occurrence should take place, my feeling of dread at what I had undertaken became more and more acute. This is not because of any lack of appreciation of the opportunity to discuss some of the present-day problems with those who are about to enter upon the profession which has been mine for so many years. Rather it arose from a knowledge of the fact that it is with extreme difficulty that any one translates into language which can be of benefit the accumulated experience of long years.

Naturally I am desirous of saying something that will not only be of interest, but also will be helpful, and in doing this I have turned to those in the past who have spoken with authority and influence, for example Sir Thomas Browne in "Religio Medici." To read the words of such men is stimulating, but it is also the cause of genuine humility, as it is only given to the rare person to be able to put thoughts into words which will be of real value. Possibly I could do no better than simply to urge upon you to read what has been written by the many leaders in our profession throughout all time. Undoubtedly the pressure under which one labours in this day makes it difficult to do this, and one is led by the necessity of following the rapidly changing current events, rather than by the wisdom of delving into that which has gone before and which finds expression in the accumulated writings of those observers who have become household words among us.

It is trite to say that there are to be found in the lessons of such masters wise thoughts that are of the utmost value day by day, and yet it is a lesson that too few seriously take to heart. After all, there are not so many fundamentals of great value which are new, that we need be overwhelmed by them at the expense of what is old. There is hardly a more important lesson that could be learned by those of you who are about to launch upon your life's work than that you should fill your minds with those truths which are not new, but are old, tried and of proved worth.

This truth is equally applicable to the topic which is to receive our attention to-night, namely, the relation of your profession to society, as to more practical and scientific matters. To you no less than to those who are already of our profession, there is an interest in determining what is the relationship which unites us to, or differentiates us from, our fellows. That there are strong forces at work testing the security of the world's hold on its own destinies cannot be doubted. That these forces affect the physician and his profession equally with all others and their activities is beyond question. For these reasons it is imperative that we review our

own position, and chart the course to be pursued.

There is a disturbing feeling that adverse conditions are threatening the individuality of the doctor. This feeling is engendering fear, and fear is never a sound foundation upon which to meet a danger or construct an edifice. Viewing these things, it seems wise to look into the past and find if possible inspiration which will send us forward with confidence, in meeting the changed conditions of to-day.

That the physician and his profession are held in especial relation to society cannot be questioned. It has been the subject of written and spoken word from the time when the Greeks in the midst of the Trojan battle, at the wounding of their physician, Machaon, called upon Nestor, "Haste, mount thy chariot, let Machaon take a place beside thee. A man like him is worth a host of us." It recurs on down through the years, in prose and poetry, in comedy and tragedy. It is shown in daily intercourse and conversation. You as medical students have begun to sense it. When you subscribe to the Hippocratic oath, which I trust will never be dropped from association with the granting of your diplomas, you will pause to ask why we, rather than the lawyer, the engineer, the businessman, the aspirant for advancement and honor at the hands of the State should be asked to give so liberally. The young in our profession are learning it day by day, and to the old it is so complete a part of their being that it is accepted without question as to whence it comes or why it is.

But we as beings differ not one-jot from our fellows. We all started at scratch and followed the same course until we diverged from others in our early studies and followed the sciences leading into the field of biology, while they turned to mathematics and the physical sciences, or to cultural paths and jurisprudence. From that day we were surrounded with the mysteries of life and death,—the knowledge that in this lies the essence of all the universe. What is life? What is death? Wherein does the one differ from the other? Is there a body only or is there a soul, call it what we will, within the body? Not that these were our daily thoughts or our conscious questionings. Nevertheless they were there, and were shaping us into that mold which in some subtle way is the substance of wherein we ourselves and society set the doctors apart.

While still students you have been called upon to witness and be partners in those things which belong solely to our profession, things of such a nature as to leave an indelible impression, and of which you think with reverence and hesitate to speak as one speaks of the casual happenings. Read "Rab and His Friends." As can be testified to by those who have only re-

cently preceded you, and with far deeper feeling by those who have grown old and gray—but never hardened, rather more tender in the service—these experiences will be a part of your daily lives, and the place of life, of death, of the body and the soul in the universe, will be your constant companion.

These things were always so, from the earliest time, and while our methods of becoming doctors have constantly and greatly changed, these factors have not changed. Thus in all time the physician is set apart and as Homer tells us, the fighting men of Greece recognized his especial worth.

Let us see how this differentiation has been translated into action. The State has never claimed any especial privilege over the medical profession. But the medical profession has traditionally accepted the right of society to regulate it, and in fact has been a leader in formulating the needed regulations. This tradition found actual expression as early as the Babylonian civilization, when, twenty two hundred years before Christ, Hammurabi incorporated, in his compilation of the laws, regulations governing the practice of Medicine. At that early date, the doctor was called upon to regulate his fees in accordance with ability to pay a sliding scale not dissimilar to that which has been the accepted procedure to our own time. The oath as prescribed by Hippocrates in the fifth century B C placed upon the doctor an ideal outlook to which he has been expected to adhere ever since.

The earliest record that is found cited in Garrison's "History of Medicine" of an actual license to practice medicine occurred in the Emperor Frederick II's edict in 1224. This followed the establishment at Salerno of a school of medicine, the earliest of its kind, and a candidate for license was examined in public by the masters at that school. The candidate was required to have studied logic for three years, medicine and surgery for five years, and to have practiced for one year under some experienced physician. The candidate in surgery had to give evidence that he had studied the art for at least a year, in particular anatomy. The physician was required to treat the poor for nothing to visit his patients twice a day and once a night if necessary, to avoid collusion with apothecaries and inform upon them if they adulterated or substituted drugs.

The medical fee was fixed, amounting to about 35c for an office visit or for a house visit within the city, and approximately \$3.00 for out-of-town visits, but in this case, the physician must pay his own expenses. The sale of poisons, magic potions and aphrodisiac philters was punishable by death if any person lost his life thereby. It is further noted that foods, drugs and by Apothecaries' mixtures were examined at stated

intervals by inspectors and timely regulations were made in municipal and rural hygiene.

Garrison comments, "Given the time at which it was issued it would be hard to improve upon the plain scope and intention of this law which was followed by similar ordinances for Spain (1283) and Germany (1347), and was again confirmed by Joanna of Naples (1365)."

This edict was a strong factor in raising the status of the physician above that of the then numerous quacks and charlatans.

Two centuries later the Royal College of Physicians of England adopted the Statuta Moralia for the practice of Medicine.

About 1790 Sir Thomas Percival formulated a Code of Medical Ethics for the guidance of his son which has become the generally accepted standard of ethics governing the relation between doctors themselves and their patients and society.

It is interesting to note that there is often recognized that line which divides the practical interests of the doctor from that of the patient in the question arising from the care of the latter and the remuneration to be received by the former. This is summed up as follows by Leake in the 1927 edition of Percival's "Medical Ethics", "The fundamental ethical question of the medical profession thus arises. If physicians have a pecuniary interest in treating the ills of humanity, can they in honesty really desire to see mankind in perfect health? Ideally, the answer is 'yes' hedonistically, it is 'no', and actually society has found it necessary to interfere by law to safeguard the interests of both. This has usually been done by enacting fee codes and by requiring a certain standard of training and skill before granting permission to practice medicine."

Fite in "The Study of Ethics" expresses a similar thought as follows: "In all the professions there is a certain felt divergence between the demands of professional honour, and intellectual integrity and the conditions of professional work, and a man who should give unyielding and absolute devotion to honour would not be able to maintain his position. For the physician the strictly scientific practice of medicine leads often in one direction, the condition of remuneration in another."

Thus it is recognized that ethically and practically there may be a constant warfare within the doctor's orbit. Tradition teaches that ethics shall prevail. To-day we are faced with the problem of abiding by tradition or descending into the market place. If we choose the latter, we must be of the market. If we choose the former, we must remain under the protection of professional ideals.

That cynical philosopher, George Bernard Shaw in his preface to *The Doctor's Dilemma* states, "As to the honor and conscience of doc-

tors, they have as much as any other class of men, no more and no less."

If this statement be true, the medical profession does not stand in a peculiar relation of responsibility to the state. Those who have read *The Doctor's Dilemma* and particularly the Preface thereto, cannot have escaped a feeling of resentment at the cold-blooded way in which Bernard Shaw analyzes the weaknesses of the doctor who is called upon to meet an emergency of illness and at the same time recognizes that he must be remunerated for this service.

We cannot on the other hand escape the fact that doctors, despite the forces that are at work to mould them into a form of their own, and despite the tradition of ideals which is their heritage, are still human, and need the power of ideals and tradition if they are to live up to the high estate which the great and good among them have so continuously placed as the goal.

The Principles of Medical Ethics of our national Medical Association opens with this statement "A profession has for its prime object the service it can render to humanity, reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals."

After formulating precepts of conduct, the Principles conclude with the following "While the foregoing statements express in a way the duty of the physician to his patients, to other members of the profession and to the profession at large, as well as of the profession to the public, it is not to be supposed that they cover the whole field of medical ethics, or that the physician is not under many duties and obligations besides those herein set forth. In a word, it is incumbent on the physician that under all conditions, his bearing toward patients, the public, and fellow practitioner should be characterized by a gentlemanly deportment and that he constantly should behave toward others as he desires them to deal with him. Finally, these principles are primarily for the good of the public, and their enforcement should be conducted in such a manner as shall deserve and receive the endorsement of the community."

These principles embody the essentials of all similar codes previously put forward from the first days of organized medical practice. They have gained the force of law. In a decision made by the United States Supreme Court, Mr Justice Brewer states, "The physician is one whose relations to life and health are of the most intimate character. It is fitting not merely that he should possess a knowledge of diseases and their remedies, but also that he should be one who may safely be trusted to apply those remedies. Character is as important a qualification as knowledge."

An address was given by the Honorable Joseph V. McKee on the occasion of the Anniversary Discourse of The New York Academy of Medicine a year ago entitled "Medicine and Modern Sociological Trends". After an unusually able presentation of the development of medical practice through the times, somewhat impressive to a doctor in that it shows the broad knowledge of our profession which is possessed by a layman, Judge McKee closes with this declaration "This is the dedication, the consecration of the physician to the ideals of his profession. But more than that is asked of him to-day. With these great sociological movements under way and even at fruition, it calls on him not merely to complain, not merely to disagree, not merely to debate but to find a fuller and a freer and a greater place for medicine, not only in the curing of human ills but in the great régime to make life better and happier and nobler—to bring to humankind some of the happiness on earth that the elect expect of heaven."

Professor Sigerist, the Medical Historian at Johns Hopkins University, last year delivered an address on "The Physician's Profession Through the Ages". In a masterly way he followed the duties and the responsibilities of the doctor to the state and showed inferentially at least that they do have a peculiar responsibility. His address closes with the following—"The history of the medical profession to-day has reached a crucial point, and it is our duty to save the efficiency of a noble profession, that not only has a great past, but a still greater future. Never before has society presented the physician with so wide a field of activity and with so much influential power. If never before, certainly to-day the doctor may become a statesman, the Asklepios Politikos visualized by Plato."

It is our concern to determine how this may be done and how we shall discharge the peculiar responsibility imposed by long-established tradition upon our noble profession.

The first need is that we steep ourselves in this tradition with a determination that the heritage which is ours be in no way sullied, and that we are controlled in our activities by a feeling that life is worth the living only if by our efforts and in accordance with each one's endowment some betterment of the enjoyment of life is accomplished. We are called upon to place ourselves in accord with those who believe that the remedy for the terrifying condition in which the world now finds itself lies in an acceptance of spiritual values rather than material.

If there be within our profession those who are not stimulated by a feeling of obligation to live in accordance with this heritage, it is our bounden duty to see that such are made to conform to the spirit of the high ideals of medical practice. Our oath has lost none of the force

it possessed when it was promulgated, more than two thousand years ago.

The prime obligation of the doctor to the state, then, requires that he be an example in act and teaching to the fact that he is called upon to render service, thinking first of the value of the service rendered and after that of the remuneration to be received therefor, which is the privilege of being ranked as a member of a learned profession.

To do this at this time presents one of the most serious problems that has ever faced the medical profession. The attractions of the market place are strong. The practices of the market place are not becoming to those who were moulded by studies of life and death, who experience daily contact with the body and its soul and who are called upon to minister to those when most in need of tenderness understanding and singleness of purpose. Should our profession fail to recognize the canker of mercenary wickedness in its numbers and wage battle against it, we are doomed as the Beloved Physician. To shield those who because they belong to our guild, have debauched our laws for the care of the unfortunate is a sure path to suicide or worse. To step aside when we see the money changers in the temple of the sick room is not to fight the good fight.

You young men will be face to face with such things in the near future. Would that we, your elders could say that we have fought as courageously as you must fight if victory is to lie on the side of high ideals and a noble heritage.

Do not blink the fact that the scandal of the operation of our compensation laws for employees in some states could never have arisen except that a doctor is found somewhere in the circle of vicious practice. That contemptible practice of fee splitting will be flaunted in your faces as a necessary evil almost universally accepted. Do not believe it. It is far from that. Fight it, expose it, bring it into the open. Make the public cognizant of its ugly features.

Live up to the finer feelings that are yours as you go on your daily rounds, making life happier for those to whom you minister and align yourselves with those who recognize the ideals of the traditions of medicine.

Let us live up to the standards already quoted from our national code of ethics. "A profession has for its prime object the service it can render to humanity reward or financial gain should be a subordinate consideration."

That there exists a counter responsibility on the part of society to see that in following these paths the doctor's bloodline is not sapped and that a procedure is set up whereby he may enjoy a life commensurate with the effort and strength the sincerity and devotion that he expends for the benefit of society cannot be gainsaid.

If my reading of the times is correct, in spite of all the carping and criticism that is aimed at the medical profession, society does recognize this obligation and if we rise to our opportunities, we may do so with a faith that our existence will not be jeopardized.

If, however, we adopt a course of stiff-necked blindness to the needs of the world and a willingness to consider that our own interests are paramount to those of others, we will find forced upon us conditions that will be neither to our advantage nor to that of society.

That tragedy is among us is shown by a letter which appeared in a medical publication recently. There, one who had accepted the spirit of the tradition we have discussed as the cornerstone of his responsibility, fought valiantly to uphold it and failed—failed because in it there was not the power to meet the needs of life and dependent ones. He was not afraid at having broken the law but at having "deeply wounded that something—tradition—the ideals and concomitant aims that go with our diplomas."

And another physician signs his name to a letter saying that the splitting of fees is all but a universal practice in his experience and that it is not uncommon for the doctor and the consultant to decide upon an operative procedure solely so that both may participate in the expected fee.

When such things can be, no one can doubt that some remedy must be found and all must bear a share in creating a relationship that will not permit such despair to drive a doctor to a sacrifice which thus excoriates his soul, or such contemptible practices to arise from cupidity.

As you are aware, many factors are at work to formulate a method of medical practice which it is hoped will bring better medical service to the sick than is now obtained by many who are handicapped by lack of knowledge of where to turn and lack of funds to meet the expense of sickness. That many of the proposed plans are without promise of success and socially unsound cannot be denied. That some seriously threaten the security of the doctor is undoubtedly true, and it is these that have engendered a fear—an almost paralyzing fear which has resulted in the profession presenting an almost solid front against any change.

The President has included in his social security program a medical aspect and it is with this and the activities of socially minded bodies that the doctors consider themselves especially menaced. At first glance, any organized effort on the part of society to set up a method whereby sick individuals shall receive medical care, except in the long-established way of seeking it out for themselves and arranging for it by a personal agreement between the patient

and a member of the medical profession, appears to many to threaten seriously the very foundation of professional life

Upon careful study and thoughtful consideration this threat does not seem to be serious provided we as a profession will recognize the necessities of the case and meet them squarely. We cannot escape from the general proposition that it is our desire to see that every ill person receives the best available medical care. Again, we are inevitably faced with that clash between the ideal and the practical to which reference has been made as having been recognized from the earliest days of medical practice. We gladly face our obligation to society because it is founded upon the tradition which we revere. In accepting this responsibility, we are met with the requirements of our own needs and the solution whereby these two may be reconciled is not easy.

The thought which I would place as uppermost is that the medical profession is amply equipped to face this problem and find its proper solution if it will but recognize the necessity of so doing. The profession is only now giving the requisite thought to the changing trends of which Judge McKee spoke, and it has hardly yet awakened to the significance of these trends with the determination to recognize them and find ways whereby all our people may have adequate and efficient medical care in their illnesses. With proper effort we may prove ourselves the "statesman in a wide field of activity and great influential power" in the words of Dr. Sigerist, and this effort is now demanded of us.

Much that we wish to solve would be made the easier if a greater concern over the welfare of the newly created doctor were put into practice. Neither the granting of a degree to the well-equipped graduate in medicine, nor the placing of the seal of approval of the state upon his efforts by a license to practice his profession, fulfill our duty if we covet the best of which he is capable.

It was less the medical profession itself than outside influences which inaugurated the great improvement in the education offered by our medical colleges thirty years ago. It is not to our credit that the education of the doctor thereafter has received so little attention from us during these three decades. It is our concern to see that the improvement in the medical undergraduate training gains its full fruition by affording means of further education to the doctor after he has received his degree.

We are fully aware that in many instances the internships in our hospitals, which represent the second step in education, are of far less educational value than they should be. In fact, it has been said by one of our most eminent undergraduate educators that in many instances the young doctor has lost something of great

value at the termination of his internship which had been in his possession at the time of his graduation. He referred to the painstaking care with which the student approached any problem, scientific or clinical, which had been inculcated into him in his student days. With the loose, hurried, unconsidered methods employed in some of our hospitals, the intern adopts short cuts and less orderly thinking than have been his previous habit. And even more disturbing is the testimony of interns that in some instances they are inducted into habits of low ethics and violation of honest behavior.

It is heartening to know that a serious study of this situation is now being made in one of our cities under the able leadership of a group including the medical school deans and others named by the leading hospitals and leaders in education. It is to be hoped that this particular responsibility will be met in such a way that within a reasonable time the interns will receive excellent training in medicine and its ethics, comparable to that which they have received in their undergraduate work.

Even when this is accomplished, our needs in this especial phase will not be met until we go a step farther and provide for the continued education of these same young doctors.

There are at our disposal unequalled educational advantages which are largely going to waste while at the same time there is a group of earnest young men and older ones, too who would only too gladly avail themselves of these advantages were the proper procedure set up.

The enthusiasm with which doctors at the present time grasp opportunities indicates the gross waste which occurs unless all our facilities are fully utilized. Let each bear his share in accomplishing this.

There is another direction in which our obligation to the state is becoming more and more clearly indicated year by year. This has to do with what is ordinarily considered as falling within the domain of public health. At first sight, there is always a clash between the interests of the public as seen in the activities of our health departments and the practising physician.

It is with a sense of shame that we recall that when Dr. Hermann Biggs wished to make a real advancement of the public health interests, he was opposed by The New York Academy of Medicine, a sin which in so far as may be, has been expiated by a whole-hearted support of all public health activities by that institution in subsequent years, with, at the same time, due consideration to the proper interest of practicing physicians.

I have made an effort to present the basis for a belief that the doctor does stand in a peculiar relation to society and that this relation places upon him an especial obligation. Only brief mention of the various directions in

which thus responsibility may be discharged has been made. Much could be said of any one of the subjects—the ethical standards of the doctor, his education, his relation to public health activities or the part that he must play in encouraging efficient methods of medical practice.

It has seemed more important to lay a sound foundation for the belief that there is great value in the traditions which a noble profession through the centuries has built up for its

guidance and sanctification. These traditions are endangered by the ever growing influence of practical expedient. Woe unto us and to the society we serve if the doctor become no more than a barterer in human health and life!

The privilege and the duty to be numbered with those whose names are blessed lie in our hands, and to be blessed is more than the riches of all the world or than life itself.

#### RESUME OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR FEBRUARY 1935

##### MONTHLY REPORT FOR FEBRUARY 1935

Disease	Feb., 1935	Feb., 1934	5 Yr Aver
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Boston, 1	Gardner 1	Leominster 1	Lynn, 1
Revere 1	Waltham 9	Winchester 1	Melrose,
			total 18

Tetanus was reported from Weymouth 1

Trachoma was reported from Amherst 1 Boston 1 Pittsfield, 1 total, 3

Trichinosis was reported from Boston, 1 Brockton 3 Georgetown, 2 Greenfield, 6 Reading 11 total 22.

Typhus fever was reported from Chelsea, 1.

Undulant fever was reported from Holden, 1 Somerville 1 Worcester 1 total 3

	3	0	2
Anterior Poliomyelitis			
Chicken Pox	1202	1157	1039
Diphtheria	42	27	159
Dog Bite	606	356	298
Epidemic Cerebrospinal Meningitis	2	6	8
German Measles	1907	57	126
Gonorrhea	360	416	470
Lobar Pneumonia	175	550	558
Measles	2098	8685	3077
Mumps	290	487	755
Scarlet Fever	724	971	1444
Syphilis	379	350	338
Tuberculosis Pulmonary	832	194	286
Tuberculosis Other Forms	38	31	36
Typhoid Fever	1	9	7
Undulant Fever	8	0	0
Whooping Cough	817	1273	956

Based on the figures for the preceding five years.

Diphtheria continues to give evidence of maintaining its downward trend with reported morbidity to date running twenty two per cent lower than last year.

Typhoid fever reached a record low for all time with but one case reported for the month.

Tuberculosis showed an increase in reported incidence over both the previous year and the five-year average.

German measles had its greatest prevalence since April 1918.

Measles epidemic in a few communities is low for the State as a whole.

Scarlet fever and whooping cough are running lower than in 1934.

Trichinosis was reported in twenty-two instances, chiefly in two family outbreaks where improperly cooked homemade sausage had been consumed.

Lobar pneumonia, epidemic cerebrospinal meningitis, anterior poliomyelitis, mumps, chicken pox, and tuberculosis other forms show nothing remarkable.

#### RARE DISEASES

Anterior poliomyelitis was reported from Shrewsbury 3

Encephalitis lethargica was reported from Westford, 1

Cerebrospinal meningitis was reported from Fall River 2

Malaria was reported from Boston, 1.

Septic sore throat was reported from Arlington, 1

able

## VERMONT STATE MEDICAL SOCIETY

## THE PROLONGATION OF LIFE\*

BY HENRY D. CHADWICK, M.D. †

A DOCTOR'S life work has always been a most interesting one, but never more so than at the present time. The recent graduate now begins his professional career at about thirty years of age, much better prepared than ever before. The *Journal of the American Medical Association* reports that 3209 doctors died in the United States in 1933 whose average age was 64.4 years. This is an increase of about four years since 1905. We may conclude, therefore, that a young physician when ready to practice may now look forward to a professional career of about thirty-five years. The type of practice, however, that lies before him will vary greatly from that followed by his predecessors who began their work thirty-five years ago. At the beginning of this century we knew the specific cure for rabies, malaria and diphtheria, and in 1910 a cure of syphilis was added to the list. Specific treatment is now available for the control of diabetes, pernicious anemia, and Addison's disease. These are the outstanding accomplishments in the field of medicine, but they represent the results of centuries of search for cures of disease.

The efforts made to prevent disease have yielded much richer returns. No longer do we fear widespread epidemics as most of the infections that caused them have been brought under control. The decrease in infant mortality, the prevention of infectious diseases in children, together with the lower birth rate, have resulted in a decided shift in the character of the population in respect to age groups. The average age of the population in Massachusetts in 1870 was 28 years, in 1930 it was 31 years. The population over 50 years of age has increased from 12 per cent in 1850 to 20 per cent in 1930. The average span of life has been increased in two generations from 31 years to 53. In a study made by Bigelow and Lombard<sup>1</sup> of the records of 30,000 individuals under 40 and 45,000 over 40, 34 per cent of the younger group and 27.1 per cent of the older group were sick with chronic disease. They conclude that based on these figures there are approximately one-half million individuals sick with chronic disease in Massachusetts at one time. They find that fifty years ago chronic disease caused one-third and now it accounts for two-thirds of all deaths. As to duration, they find that the average cancer case lives two years, the heart

case seven to nine years, while the rheumatic lives fourteen years or more, also, that heart disease only cripples half as long as rheumatism and is only half as prevalent. Rheumatism, according to their findings, cripples the largest number of cases, kills the smallest, and is in the lead of all other chronic diseases as of preeminent social, economic and medical importance.

The medical profession should be interested in knowing what treatment this large group of individuals with chronic disease is receiving. Nearly half of all the cases were reported as having received no treatment or only self-medication during the year. This group ran from one-eighth of the diabetics to two-thirds of the rheumatics. The reasons given were that 60 per cent felt that doctors could not help or they had no faith in them, 30 per cent thought their condition was not serious, and 10 per cent gave economic reasons.

The work of physicians, therefore, in the future will be concerned more largely with the prevention of communicable disease in children, of chronic disease in adults, and the palliation of degenerative conditions incident to the aging population. In the realm of chronic disease, its prevention and alleviation, is an undeveloped field worthy of the best efforts of the physician. Faith in the science and art of medicine must be reestablished in the minds of the people. The art of medicine has been neglected and the cold scientific viewpoint of doctors has tended to create a skepticism which must be overcome. No wonder the arthritic loses confidence when his physician, without much study of his case, leaves a prescription which is often only a placebo and by his lack of interest gives the impression that he does not want to be bothered with such cases. Some of the leaders of medicine have told me that in their own practice by rest, good hygiene, simple therapeutic procedures, regulation of diet, and removal of focal infections, 70 per cent of early cases of arthritis can be cured or kept from developing into chronic crippling conditions.

This is a challenge the profession must meet. Thousands of people are in need of such help, and physicians must be ready to give it so that confidence in the medical profession may be restored and retained. What I have said in regard to arthritics should be applied to all chronic disease. The medical care of these conditions has been given too little study and attention and has resulted in a great many patients receiving no treatment at all, or they have resorted to the cultist and the charlatan.

\*Read at the Annual Meeting of the Vermont State Medical Society at its Annual Meeting in Burlington, October 4, 1934.

†Chadwick, Henry D.—Massachusetts Commissioner of Public Health. For record and address of author see "This Week's Issue" page 582.

Furthermore, why should physicians neglect their opportunities in the field of preventing communicable disease? If the professional ethics of the past era have restrained them from offering this service, those ethics had better be revised to conform to modern standards. Because of the failure of physicians to do their part, public health authorities have had to assume the burden of immunization against diphtheria and to a lesser degree against smallpox. This activity will be relinquished gladly to the physicians whenever they are ready to assume the responsibility. Boards of health are required by law to care for and prevent the spread of communicable disease. Until the physicians take over the work they must continue to see that it is done in the least expensive way out of public funds. Physicians should take an extremely active interest in preventing disease in the children of the families that employ them. A passive attitude will not accomplish the desired result.

We will now discuss in some detail the disease prevention service that a physician may properly perform in the course of his general practice.

**Diphtheria.** Every baby when six months old is a candidate for toxoid. The sooner it is done after that age the safer the child will be, as 65 per cent of all deaths from diphtheria occur under school age. Children for that reason should not wait for school age to have this protective immunization provided. Diphtheria deaths have decreased to a remarkable degree but the case fatality is still high notwithstanding the use of antitoxin and recently it shows a tendency to increase. We have in our power the complete subjugation of diphtheria through the general immunization of infants. To-day a case of diphtheria developing in a family that look for advice in health matters to their physician is a reproach to the doctor if he has not done all in his power to immunize the child. Doctors should not let this duty go by default or leave it to the health officer.

**Smallpox.** Vaccination should also be done in the first year of life as a routine procedure. It is customary in some public maternity hospitals to vaccinate the infants before they are discharged from the institution. When vaccination is delayed until school age, more discomfort is caused and more resistance to the procedure is made by the child. The great value of vaccination has been proved and should need no argument or defence. In Massachusetts, where vaccination is compulsory for children entering public school, no case of smallpox has been reported in more than two years.

**Scarlet Fever.** Much has been accomplished toward producing immunity to this disease by the use of scarlet fever toxin. The use of toxoid is less likely to produce reactions and has been effective in preventing scarlet fever in hospital

nurses and the patients in some of the Massachusetts institutions for the care of children. The prompt use of scarlet fever convalescent serum will prevent secondary cases from developing in children who have been recently exposed. This method of control will to a large extent obviate the necessity of hospitalization of patients for reasons of quarantine and thus save many times its cost.

**Measles.** This is one of the diseases that few escape. Although considered a mild affliction, many children die from this disease each year. Over 90 per cent of fatal cases occur during the first five years of life. Therefore, the disease should be postponed whenever possible. Convalescent serum is of value but difficult to obtain and is usually not available when needed. Parental whole blood is sometimes used as a substitute but is not so reliable. McKhann of the Boston Children's Hospital has developed an extract from human placenta that promises to give us a very effective weapon for the control of measles. This extract has the advantage that it can be made in sufficient quantity for general distribution. The amount of antibodies that it contains may be quite accurately determined and if the time of exposure of the child is known an attack may be prevented or modified quite at will by administering the dose at the proper time.

**Syphilis.** There is an important field for the physician in the prevention of congenital syphilis that is too little realized. Stillbirths, premature births, blind children, and those with mental and physical deficiencies due to this cause are all too common. The physician has a great responsibility when he is engaged to care for a pregnant woman. As a part of his routine examination in every case and as early as possible in pregnancy a serological test for syphilis should be made. This disease knows no social barrier and therefore no exceptions should be made. From the National Health Council recommendations the following is quoted:

"At least 3 per cent of the children of the United States have congenital syphilis. It is well established that nearly 10 per cent of women attending prenatal clinics and a significant percentage of women examined in private practice have been found to have syphilis. About 85 per cent of the pregnancies of untreated syphilitic women end in stillbirths, neonatal deaths or children having syphilis. The treatment of syphilis as a complication of pregnancy offers no insuperable difficulties. The main problem is to discover and treat the cases sufficiently early in pregnancy to insure healthy children as a result of treatment. It is well established that congenital syphilis can be prevented in 90 to 95 per cent of the cases by the adequate treatment of syphilitic pregnant women. In order to discover syphilis early in pregnancy two things are necessary: (1) That women seek medical advice before conception or as early in pregnancy

as possible, and (2) That every physician take a specimen of blood from every pregnant woman consulting him and submit it to a laboratory for a serological test for syphilis. If the test is reported positive, treatment should be instituted at once for it is advantageous to treat syphilitic women even late in pregnancy. The earlier, however, that treatment is instituted the better the result."

*Typhoid Fever* The few cases of typhoid fever that occur now are usually of carrier origin. About 2 per cent of the cases that recover from typhoid fever continue as carriers of typhoid bacilli and throughout life are ambulatory foci of infection. Such sources are the cause of most of the sporadic cases of typhoid that we have to-day. The physician caring for a case of typhoid fever should with the help of the health officer determine the source of the infection and also keep his patient under supervision until the stools are found free from typhoid bacilli. The carriers that resulted from the many cases of typhoid fever that occurred twenty or thirty years ago are dying off from other diseases and as there are but few cases of typhoid at the present time to furnish recruits the ranks of the carriers are thinning out. We can help this natural process by seeing to it that no recovered case is allowed to join the carrier group without being tagged. If the carrier condition is known by the individual and the health officer, protective measures may be carried out that will prevent him from becoming a menace to the community.

*Whooping Cough* Whooping cough causes more deaths of children under five than any one of the other communicable diseases. Efforts are being made to produce a vaccine that will immunize against this infection. The reports of its use are promising but must yet be considered to be in the experimental stage. Whooping cough should be postponed as long as possible as after five years of age but few deaths occur. A doctor should warn mothers against exposing their infants and young children and if the disease develops it should not be treated lightly but as a serious disease.

*Tuberculosis* Notwithstanding the marked drop in death rate from this disease it still causes about 46 per cent of all deaths in Massachusetts. From studies that have been made of samples of the population in various communities we may conclude that at least 2 per cent of adults have pulmonary tuberculosis. Many of them are without symptoms or signs. A roentgenogram of the chest, however, would reveal the condition. The realization on the part of all physicians whatever their specialty that two out of each 100 patients whether they are seen in the hospital or in private practice have tuberculosis would help tremendously in the control of the disease. Do not depend upon the physical examination. However skillful you

may be, many advanced cases will be missed and practically all of the early cases will be passed over unless a roentgenogram of the chest is obtained. The stethoscope may well be omitted, but the x-ray never, in determining the presence or absence of pulmonary tuberculosis. When a case of tuberculosis is found, do not rest there. An attempt should be made to find the source of infection and other cases that are as yet unsuspected in the family. Especially is this true when tuberculous meningitis occurs in an infant or young child, as this usually means that the infection was derived recently from some member of the household and should lead to a roentgen examination of each adult, a tuberculin test of each child, and an x-ray of each one that the test shows to be infected. When such procedures are routine, you will have early diagnosis in many more cases and more successful treatment because it can be instituted at a favorable time.

With the marked lessening and eventual control of many of the communicable diseases, conspicuous examples of which are typhoid and diphtheria, the physician has been deprived of much remunerative practice. This financial loss can in large measure be compensated for by taking advantage of the opportunity to carry out immunization procedures, in other words, practice preventive medicine.

If it is important to extend the lives of the laity, it is also desirable to increase the life span of the physician who is responsible in large measure, together with the sanitary engineer, for the twenty added years which this generation can boast over those that have gone before.

Dr George W Crile says people can prevent many an illness by avoiding fatigue, worry and anger. In the present economic state of society we may be getting along with less fatigue, but worry has increased. It is impossible to find a comparative gauge with which to measure anger. Political campaigns probably have some deleterious effect on longevity, as then fatigue, anger and worry reach their high peaks. Doctors, however, do not as a rule take other than medical politics very seriously and are probably not affected by these periodic disturbances.

Are doctors long-lived? It is answered by the Statistical Bureau of the Metropolitan Life Insurance Company in a recent study. They find that a physician at thirty years of age has a life expectancy of thirty-eight years, just two years less than the average insured person of the same age but one year more than the man in the general population. Further comment is as follows:

"Clearly, the personal advantage to himself, which the doctor must derive from knowing when the human body is out of sorts and what to do about it, is more than

counter-balanced by the exacting duties the irregular hours, the liability to emergency calls at any and all times and in all weathers, which fall to his lot, especially in country and small town practice. Yet doctors are a highly selected lot; they cannot even begin practice until they have stood the grind of a medical curriculum followed in most cases, by a period of apprenticeship in hospitals. There is a certain social selection also all of which must tend to make medical men a group with better than average physique. In spite of these initial advantages, as he runs his life course, the physician is constantly working against odds and in the end he is left with only a meager margin of advantage over the general population of the country.

A study of death rates by occupation based on data of the U S Census Bureau in 1930 by Jessamine S Whitney Statistician of the National Tuberculosis Association has just been published. One of these tables gives the standardized death rates for specified causes per 100,000 gainfully occupied males 15 to 64 years of age in selected occupations according to social economic class and component occupations in ten selected states. It is interesting to compare the death rates of the professional men with the rates for all males considered in this study. The rates per 100,000 as taken from this tabulation are as follows:

	Physicians	Lawyers	All Males
Heart Disease	210	189	175
Cancer	72	75	81
Nephritis	65	58	57
Cerebral Hemorrhage	53	52	42
Pneumonia	47	41	69
Suicide	40	23	35
Pulmonary Tuberculosis	23	18	87
Cirrhosis of the Liver	17	11	10
Diabetes	12	14	13
Accidents	11	11	9

This shows that the rates for physicians exceeded those for lawyers in heart disease, nephritis, pneumonia, suicides, pulmonary tuberculosis, and cirrhosis of the liver. In only two, namely, cancer and diabetes, were the rates higher for lawyers. As compared with all males, the rates for physicians are higher in heart disease, nephritis, cerebral hemorrhage, suicide, and cirrhosis of the liver. They are lower in cancer, pneumonia, pulmonary tuberculosis, accidents and are the same in diabetes. It is startling to find suicides No. 6 in this list of causes of death—ranking above pulmonary tuberculosis, cirrhosis of the liver, diabetes, and accidents.

Dr Herbert L Lombard of the Massachusetts Department of Public Health has compiled causes of death for 220 physicians who died in the State in 1931-32. The causes were as follows:

Heart Disease	82
Cancer	21
Nephritis	21
Cerebral Hemorrhage	19
Pneumonia	9
Diseases of the Prostate	9
Accidents	9
Diabetes	7
Appendicitis	6
Suicide	6
Arteriosclerosis	5
Influenza	3
Hernia with Intestinal Obstruction	3
Pulmonary Tuberculosis	2
Miscellaneous	18

The diseases listed as the first ten are the same as in the *Journal of the American Medical Association* tabulation except that cirrhosis of the liver and pulmonary tuberculosis in Massachusetts were displaced by diseases of the prostate and appendicitis. Pneumonia is the only acute disease that finds a place in the first ten causes of death in all lists.

PERCENTAGE OF PHYSICIANS IN UNITED STATES  
DIED OF IMPORTANT CAUSES,  
1923-1933

*Journal of American Medical Association*

	1923	1923
Total Number of Deaths	3209	2570
Cardiovascular Renal Disease	41.0	26.3
Respiratory Diseases	13.9	11.9
Cerebral Hemorrhage and Paralysis	11.8	10.5
Cancer	8.9	6.2
Accidents	4.6	4.9
Suicide	3.2	3.5
Diabetes	3.1	1.5
Tuberculosis	1.7	2.3

This table shows that in the last ten years cardiovascular renal disease and cancer have greatly increased and last year caused the deaths of 49.9 per cent, or 1600 physicians. On the basis of the prevalence of these diseases in 1923, only 33.0 per cent, or 1060, would have died from these causes—1060 instead of 1600. Respiratory diseases, cerebral hemorrhage and paralysis, and diabetes show slight increases. Accidents and suicides are about the same, and tuberculosis shows a decrease corresponding to the decline in other groups of the population.

The average age at time of death of males over 25 in 1931-32 in Massachusetts was 62.73 of physicians and surgeons, 63.60, of dentists, 58.97, of clergymen, 65.56, and of other professions, 61.16. Physicians outlive the average male by one year, the dentists by nearly five years, the other professional men except the clergymen by two years. The clergymen seem to have the advantage of outliving the members of all other professions. Perhaps they experience less fatigue, less worry and less anger, which may account for their living two years more than the physicians who minister to their physical ills.

How can the doctors live longer? The per-

centage of population in Massachusetts over 50 years of age increased from 12 per cent in 1850 to 16 per cent in 1880 and to 20 per cent in 1930. Notwithstanding the greater number that reach the half century mark, the average age of this group at death has not changed materially for sixty years. In 1870 the average age at time of death of those over 50 was 69.8, in 1910 it was 69.3, and in 1930 it was 69.5. Doctors should exceed this average because of the knowledge of diseases and their prevention which they possess and apply it to themselves. For example, they are familiar with precancerous conditions and evidence of early cancer and should be more alert to sense the danger to themselves from such lesions than would their patients. With four per cent more of the population over fifty years of age now than was true fifty years ago, physicians, like other adults, furnish a larger group of cancer susceptibles and they should be on the watch for its earliest signs or symptoms and take appropriate treatment. Doubtless some deaths from cardiovascular renal disease could be prevented and many lives prolonged if the early indications of these diseases were heeded and the daily routine of work and recreation adjusted to the handicap, whatever it may be. This means a periodic check-up from time to time and then living within our limitations. Adopt the methods of the steam boiler inspectors who arbitrarily cut down the steam pressure that is permitted after a boiler has been in use a certain number of years and it is further reduced if weaknesses are found or suspected in the tubes or shell of the boiler. Doctors, as well as other men, when they get beyond their fifties should ease up on their work and not play too hard or too long or expose themselves to the hot sun unnecessarily. To do so is to invite disaster. If one must play thirty-six holes of golf, divide the job into two parts and work off one half only on a single day—and there will come a time when nine holes should be the limit. Golf should be a pastime—not a dissipation. The man of sixty is foolhardy to compete with the man of thirty in strenuousness either at work or play. Acquire a respect for pneumonia and do not invite its attack by inattention to respiratory infections. Pneumonia has been called the "old man's friend" but the doctor should take precautions and not permit this friendly visitor to enter prematurely. Our Massachusetts tabulation of deaths of 220 doctors showed that six died of appendicitis and six by suicide. It would seem that doctors, with their knowledge of the symptoms of appendicitis, when they themselves experience those symptoms would make an early diagnosis in their own case. Procrastination in this regard seems to be one of the doctor's deadly sins. The doctor who takes his own life to escape its responsibilities or to avoid dying from chronic disease is not exhibiting the

bravery he urges upon his patients in similar conditions. Fewer doctors should die of diabetes in these enlightened days. Dr. Joslin is constantly giving out medals to diabetic patients who under his supervision have outlived their expectancy at the time their disease was discovered. Choose a well-balanced diet, avoid dietary fads. The appetite is a good guide as to what to eat but not how much. The scales and the belt should determine the amount. Physicians who practice the tenets of good health in their community prevent disease, alleviate suffering, and delay death. St. Luke, a physician, reports the Master as saying "As he said unto them, ye will surely say unto me this proverb, 'Physician, heal thyself, whatsoever we have heard done in Capernaum, do also here in thy country'"

## REFERENCE

1 Bigelow George H. and Lombard Herbert L. Cancer and Other Chronic Diseases in Massachusetts Boston Houghton Mifflin Co. 1933

## MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH  
FEBRUARY, 1935

Cases of communicable diseases reported to this office during the month of February are as follows: chicken pox 149, diphtheria 1, measles 20, mumps 7, typhoid fever 1, scarlet fever 77, whooping cough 195 and tuberculosis 7.

The Laboratory of Hygiene made a total of 1,371 examinations during the month of February, classified in the following manner:

Examinations for diphtheria bacilli	73
"    " Widal reaction of typhoid fever	43
"    " undulant fever	43
"    " gonococci in pus	101
"    " tubercle bacilli	156
"    " syphilis	525
"    " of water, chemical and bacteriological	36
"    " water, bacteriological	170
"    " milk, market	95
"    " milk submitted for chemical only	13
"    " milk submitted for microscopical	32
"    " foods	1
"    " drugs	12
"    " for courts, miscellaneous	16
"    " of animal heads for evidence of rabies	1
Miscellaneous examinations	52
Autopsies to complete death returns	2

Nineteen cases of gonorrhea and twenty-one cases of syphilis were reported to the Division of Communicable Diseases. One thousand, one hundred and thirty-nine Wassermann outfits and 501 gonorrhreal slides were distributed by this Division during February.

The nurses of the Division of After-Care for Infantile Paralysis visited 125 infantile paralysis patients in their homes, three in the Burlington office and five at Dr Ober's office in Boston. Three patients were admitted to the Children's Hospital in Boston and two discharged from this hospital. Eight patients were admitted to the Audubon Hospital and five discharged from that institution. Salaries amounting to \$61.96 were reported by the Vocational Worker of this Division.

The greater part of the time this month, the nurse of the Public Health Nursing Division has given her attention to organizing and supervising the work of the V. H. R. A. nurses. Fourteen nurses and one supervisor are now working under this project. Ten nurses are acting as assistants to already existing associations two are doing school nursing and one supervisor and two nurses are doing generalized service in one county. Four hundred and eighty-one pieces of literature were mailed out by this Division and 358 birth notifications were mailed to parents.

## OBITUARIES

**BROWN—EDWIN MERRIMAN BROWN M.D.**, of Sheldon Vermont was born December 5 1855 and died February 3 1935 following a lingering illness.

He received his early education in Sheldon later

going to Kimball Union Academy Burr and Burton Seminary and graduated in 1879 from the University of Vermont Medical College. Shortly after his graduation he returned to Sheldon and had practiced there approximately thirty-five years.

Dr Brown was prominent not only in medical circles in Vermont, but also in the public and political life of his community.

His widow formerly Fannie L. Cummings of Berkshire Vermont one son Fred C. Brown, of Barton Vermont, and three daughters, Mrs. O T Green, of Burlington Vermont Mrs. F F Zwicker, of Sheldon Vermont, and Mrs. E W Lance of Rahway New Jersey and one sister Mrs. M G Rawley of Groton Massachusetts survive him.

**MCGUIRE—E. E. MCGUIRE, M.D.** of Montpelier Vermont, a general practitioner of fine qualities was born in Keeseville New York, September 29 1868 and died in Montpelier Vermont, November 20 1934 in which town he had practiced since 1887.

Dr McGuire received his preliminary education in Keeseville New York. He was a graduate of the University of Vermont Medical College in 1895 after which he spent two years interning at the Mary Fletcher Hospital, Burlington, Vermont.

Surviving relatives are four brothers Peter and Edward of Chicago and John and Bernard of Montpelier Vermont.

## AMERICAN PUBLIC HEALTH ASSOCIATION

The sixty-fourth Annual Meeting of the American Public Health Association will be held in Milwaukee Wisconsin October 7-10 1935. This organization is a society of 4500 professional public health workers whose annual sessions review developments in health protection and promotion and outline plans and policies for future advances.

Several related organizations have announced that they will meet simultaneously with the American Public Health Association at Milwaukee. They are the following:

- American Association of School Physicians
- International Association of Dairy and Milk Inspectors
- Conference of State Sanitary Engineers
- International Society of Medical Officers of Health
- Association of Dairy Food and Drug Officials
- Conference of Wisconsin Health Officers
- Conference of State Laboratory Directors
- Association of Women in Public Health.

The fourth Health Education Institute sponsored and conducted by the American Public Health Association will be held October 4, 5 and 6 prior to the opening of the several conventions. The subject

will be "Health Education in Small Cities and Rural Communities."

A Health Exhibit featuring commercial scientific and educational displays is a feature of the American Public Health Association Annual Meetings and will be conducted as usual at Milwaukee.

The preliminary program plans include special sessions on The Role of a Health Department in a Program of Social Security Mental Hygiene, Professional Education, Veterinary Public Health Diphtheria Immunization, and a session upon the history and achievements of the Association's Committee on Administrative Practice celebrating its fifteenth anniversary.

The ten sections of the Association—Health Officers, Laboratory Vital Statistics Public Health Engineering Industrial Hygiene Food and Nutrition Child Hygiene, Public Health Education, Public Health Nursing Epidemiology — will discuss Pneumonia, Trench Mouth, Syphilis Measles Outdoor Bathing Places Scarlet Fever Milk Sanitation Water Sanitation, Foods Health Education, and many other topics representing the responsibilities of health authorities.

The Chairman of the Local Committee on Arrangements is Dr John P. Kochler, Health Officer of Milwaukee. The American Public Health Association at 50 West 60th Street, New York City will be glad to send program outlines on request.

**CASE RECORDS**  
*of the*  
**MASSACHUSETTS GENERAL**  
**HOSPITAL**

ANTE MORTEM AND POST MORTEM RECORDS AS USED  
 IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C CABOT, M.D.

CASE 21131

PRESENTATION OF CASE

A fifty-nine year old Canadian janitor entered complaining of left-sided abdominal and back pain of six weeks' duration

Two years before entry he had an attack of sharp knife-like pain in the right chest about three centimeters from the costal margin in the midaxillary line. This pain was aggravated by breathing but was not severe enough to prevent him from working. It lasted about three weeks and, according to the patient, was not associated with fever. One and a half years before entry he developed nocturia, three or four times a night, which had increased in frequency, especially during the past six weeks. He urinated only about four times during the day. There was no dysuria, hematuria or difficulty starting his stream. Over this same period he had a dry, hacking cough which was not relieved by cough medicine. For the past year he had shortness of breath upon exertion which had gradually increased. There was no edema. Four months before entry he gradually became hoarse, a symptom which had increased in severity. He had a mild degree of orthopnea during the past two months. Six weeks before admission while at work he noticed a sudden dull pain in the left iliac region, just above the iliac crest, when he arose from his chair. A physician strapped his back for two weeks without relief. The pain remained a constant dull ache which was aggravated by exercise and deep breathing. One month before entry the pain changed in location, rising to the region of the left lower ribs in the axillary line. It remained constant and dull but was marked by severe, sharp exacerbations three or four times a day, each lasting about half an hour. These pains were not relieved by milk or soda and occurred during both day and night. They radiated from the midabdomen around the periphery of the abdomen to the back and spine but never to the thighs or shoulders. During the past few days he was forced to sit up during the night in order to get relief. The dry hacking cough became worse but remained entirely unproductive. He became weak and lost his appetite. He developed marked constipation, a factor which had never troubled him before. For two days prior to

entry he had vomited a good deal. During the past six weeks he had lost twenty-three pounds in weight.

The family, marital and past histories are non-contributory.

Physical examination showed a well-developed and fairly well-nourished man in no acute distress. Throughout the right chest there were numerous expiratory and inspiratory wheezes and rhonchi, especially in the region of the hilus. Over the right scapular region there were dullness and slightly diminished voice sounds, but normal tactile fremitus. There were a few finely scattered clicking râles over the left base. The heart was not remarkable. The blood pressure was 155/110. There was a definite mass in the left umbilical region which descended upon respiration. The costovertebral area on the left was hard and unyielding.

The temperature was 98.4°, the pulse 90. The respirations were 20.

On examination the urine was cloudy, acid in reaction, had a specific gravity of 1.016 to 1.022 and a very slight trace of albumin. The sediment contained five to fifteen white blood cells, an occasional red blood cell and a few granular and hyaline casts. The blood showed a red cell count of 5,200,000, with a hemoglobin of 75 per cent. The white cell count ranged from 11,800 to 22,000, 72 per cent polymorphonuclears. The stools were negative. A Hinton test was negative. The nonprotein nitrogen of the blood was 52 milligrams. The serum protein was 7.2.

X-ray examination of the chest showed a large area of homogeneous dullness extending from the level of the clavicle to the level of the fourth rib anteriorly on the right. The dullness was quite dense, obliterating the outline of the ribs. In the lateral view this dullness occupied the apex of the lower lobe and the region of the septum between the upper and lower lobes. There was also considerable diffuse mottling in the lower portion of the right lung field and what appeared to be homogeneous dullness in the hilus region. The heart shadow was not displaced. The trachea was in the midline. The diaphragm on the right was a little high in position and irregular. Its motion was limited. The left lung field was clear. An intravenous pyelogram showed that the right kidney was not remarkable in size or shape and excreted the dye very readily. The left kidney shadow was enlarged to about twice that of the right and excreted no dye at the end of one hour. A retrograde pyelogram on the left showed that the kidney pelvis was small and elongated. There was dilatation of the major calices and a tendency to clubbing of the minor calices. The upper major calyx was considerably dilated and there was fringing along the borders of the minor calices. A bronchoscopic examination showed two raised elevations, one medially and one posteriorly, in the right main bronchus.

about one inch below the carina. These projections moved to and fro with forced respiration and did not appear to be outcroppings or new growths. Although the right main bronchus was definitely narrowed, the opening to the right upper lobe bronchus was also narrowed. On expiration a definite mass was seen to protrude from the mouth of the upper lobe bronchus. The mass was smooth and red and was biopsied. The pathologic report showed no evidence of tumor.

Two weeks after admission he had pain in the lower part of the left axilla over which a definite friction rub was heard. He became slightly irrational for a few days, his nonprotein nitrogen rose to 80. During the following week he improved. His friction rub disappeared and his chest sounds were better. He received intravenous glucose and showed marked improvement. During the fifth week he had a marked turn for the worse. He became weaker. His cough became more severe and productive. He was put into an oxygen tent without avail and died that day.

#### DIFFERENTIAL DIAGNOSIS

DR. MAURICE FREMONT SMITH "Two years before entry he had an attack of sharp, knife-like pain in the right chest about three centimeters from the costal margin in the midaxillary line." One would expect pain in that position to be pleurisy. A tuberculous pleurisy usually results in the formation of fluid and the pain disappears. This pain remained three weeks. Pain associated with motion of the pleura which persists, is caused by malignancy and it is characteristic of malignant pleurisy that even though fluid forms the pain persists.

"He urinated only about four times during the day." That is interesting. One would expect a lesion of the bladder or prostate to cause difficulty in urination during the day as well as night, though it is true that certain cases of prostatic hyperplasia first notice frequency at night and much less frequency during the day. The thing that causes nocturia is lowering in function of the kidneys, so that secretion persists after the patient is at rest. Normally the kidney stops secreting very quickly. If the kidney is not removed the kidney keeps on functioning and you have a large amount of urine secreted at night.

"There was no dysuria, hematuria or difficulty starting his stream." Which argues against a local bladder or prostatic lesion.

"He had a mild degree of orthopnea during the past two months." Either he had a heart that was failing or a new growth in his chest.

The pain and increased hoarseness would lead one to think seriously of a carcinoma of the bronchus with metastases to the glands in the chest.

All this pain of which he is complaining, with the exception perhaps of the first, would be satisfactorily explained by metastases to the spine. This type of pain with the acute exacerbations is characteristic of a lesion involving the sensory root or possibly the ganglia. It is a root type of pain although not felt encircling the trunk. We should remember how often pain from cord tumor will not be felt in the back. It may be felt first anteriorly. Gall bladders have been taken out, and angina pectoris has been diagnosed in cases which really are pressure on the nerve roots, either an arthritis or a cord tumor.

"These pains were not relieved by milk or soda." It is interesting that they should have been thinking of a lesion in the gastrointestinal tract, a duodenal ulcer, and certainly this area of pain does not suggest that. It is almost impossible for ulcer, unless perforating, to cause pain in that region, just above the iliac crest or just below the ribs on the left.

Position of the trunk made a great deal of difference. In the intrinsic cord tumors position makes very little difference. It would seem that this must be a vertebral lesion, metastatic.

I should like to ask Dr. Lord under what conditions one does get, assuming the observations to be correct, normal tactile fremitus and diminished voice sounds. I should not think of them as going together. Even a thickened pleura should give diminution in both if it gives either. It may be that the observation is not correct.

Here in the chest we have evidence either of a new growth causing the dullness or else something pressing on the bronchus and causing collapse of a portion of the lung, which, again, would increase the density of that portion of the lung and transmit the sounds from the bronchi more easily. We also have evidence of something above the umbilicus on the left side, and a costovertebral angle on the left which is hard and unyielding.

Putting the evidence together, as far as we can we have probable malignancy in the chest, malignancy in the spine and an indication that we may be dealing with something malignant in the left costovertebral angle, having to do with the kidney. This mass above the left umbilical region might be kidney, might be spleen, might be liver, although one would expect it to be felt all the way across in that condition. It is not retroperitoneal mass because it moves with respiration. My guess so far is that it is kidney.

There is nothing very helpful in the urine examination. White cells and an occasional red cell in a man of fifty nine might be due to an infected prostate. The specific gravity is good rather remarkably good for a nonprotein nitrogen as much raised even as fifty two. He has

a perfectly normal red count. How are we going to justify that red count in the presence of widespread malignancy? How are we going to explain the white count? One may be able to explain the white count by superimposed infection. The normal red count is very unusual for a man with widespread malignancy. It would be reasonable to say that the bone marrow had not been involved. On the other hand I am saying also that he has a metastasis to the spine.

#### X-RAY INTERPRETATION

DR DONALD S KING The two films are taken a month apart and they show an advancing atelectatic process. The upper lobe was involved first and then the lower, and in the end there is collapse of a large portion of the lung. There is then x-ray evidence of increasing bronchial occlusion resulting in atelectasis. The physical signs are also those of partial bronchial obstruction since there is a record of wheezing which is limited to one side of the chest. This "unilateral wheeze" is an increasingly important physical sign.

DR FREMONT-SMITH We have no evidence of metastasis to the glands?

DR KING None that I can see.

DR FREMONT-SMITH No fluid?

DR KING No.

DR FLETCHER H COLBY This is a rather confusing pyelogram. It makes one think in the first place of chronic inflammation and possibly of tuberculosis due to fuzziness of some of the calices. The only thing one can say is that it is suggestive of chronic inflammatory disease of the kidney pelvis.

DR FREMONT-SMITH Will you say that neoplasm of the kidney is not likely?

DR COLBY I should say it was unlikely from the pyelogram but could not be ruled out. The usual finding in renal malignancy is a deformity of the kidney pelvis and there is no evidence of such in the pyelogram. Again, it must be remembered that the intravenous pyelogram on this patient did not show any function of the left kidney. That is evidence of sufficient impairment of renal function so that the dye does not appear and is more common in inflammatory conditions than in neoplastic disease.

A PHYSICIAN Did this kidney secrete urine?

DR COLBY Yes, it did.

DR FREMONT-SMITH If there were a neoplasm that had pressed on the lower portion of the kidney pelvis and interfered with function would you not get a slight hydronephrosis and retention in dye?

DR COLBY Yes, you might.

DR FREMONT-SMITH The pathologist's report on the bronchoscopy biopsy was "no evi-

dence of tumor". Of course that does not mean that there was no tumor there.

DR G BERNARD FRED I did the bronchoscopy on this patient. It was done under local anesthesia. A 7 millimeter bronchoscope was passed and the carina found to be normal and in the midline. The left main bronchus was not examined. The bronchoscope was passed into the right main bronchus where it was stopped about one inch past the carina on account of a marked narrowing of the lumen. It would not go down into the terminal bronchus. The mucous membrane of this right main bronchus was red and thickened and it had on its surface two small, raised projections of mucous membrane, one of which sprang from the medial wall, the other from the posterior wall. They moved to and fro with respiration. They did not seem to be outcroppings or new growth. The opening to the right middle lobe was not seen because of the narrowing of the right main bronchus. The right upper lobe bronchus was found with difficulty and when finally seen it was found to be merely a vertical slit.

The lumen of this upper right bronchus contained no blood, pus or new growth on quiet respiration. However, on forced expiration a definite mass was seen to protrude about one-eighth of an inch from the lumen. This mass was dull red, smooth and rounded in appearance. A biopsy was taken followed by profuse bleeding. At the time of the bronchoscopy I made a definite diagnosis of "new growth involving the right upper lobe bronchus".

#### DIFFERENTIAL DIAGNOSIS CONTINUED

DR FREMONT-SMITH It is possible that we are dealing here with something outside the bronchus, pressing on it, and causing narrowing of the bronchus and yet the mucous membrane is a normal mucous membrane. A gland pressing on the bronchus might cause collapse and atelectasis and all the rest of the picture. The only difficulty is that we have no enlarged bronchial glands.

I do not know what the diagnosis is. I think it may be wise to disregard the kidney as an important part of the picture. I feel that he had two lesions. Certainly we cannot explain the whole picture on tuberculosis. We cannot explain the kidney picture and the bronchoscopy on the basis of one malignant lesion. If he had a hypernephroma the metastases would be more widely distributed. On the other hand there is no reason to connect a primary bronchiogenic tumor with a lesion in the kidney of this type. Therefore, I throw the diagnosis before the house. I feel that there are two lesions (1) question of tuberculosis of the kidney and (2) a probable bronchiogenic carcinoma with metastasis.

## CLINICAL DISCUSSION

DR. KING: I am interested in the question of metastases from primary bronchiogenic carcinoma. I do not know what your figures are, Dr. Mallory, but I believe that you have frequently found metastases from bronchial carcinoma to the adrenals.

DR. TRACY B. MALLORY: Yes in our experience they are very common. I must disagree, moreover, with Dr. Fremont-Smith since we often see an apparently solitary metastasis from a carcinoma of the kidney.

A PHYSICIAN: Might the abdominal mass have been adrenal?

DR. HOLMES: I think this is extensive malignant disease and you would expect at least a displacement of the kidney.

DR. MALLORY: It is true that we have found adrenal metastasis with great frequency in our cases of primary carcinoma of the lung but on the other hand they have rarely been large enough to be clinically noticeable and palpable.

DR. HOLMES: The absence of dye secretion in the right kidney is a bit unusual in the kidney tumor. We have four cases of kidney tumor in which there was no dye secreted. In all of these there was a definite block in the ureter. Usually a kidney tumor does not interfere with the secretion of the dye.

## CLINICAL DIAGNOSES

Carcinoma of the lung?

DR. MAURICE FREMONT SMITH'S DIAGNOSES

Primary carcinoma of the bronchus with metastases to spine.

? Tuberculosis of the kidney

## ANATOMIC DIAGNOSES

Carcinoma of the lung with metastases to the kidneys, ureter, anterior mediastinum, heart, aorta, and the bronchial and retroperitoneal glands.

Pulmonary abscess, right upper lobe.

Pleuritis, chronic fibrous.

## PATHOLOGIC DISCUSSION

DR. MALLORY: We found two large tumor masses, one of them completely surrounding the bronchus to the right upper lobe and to a certain extent projecting into it. Beyond the point of obstruction there was extensive infection with bronchiectatic cavities running up to the periphery of the lobe, accounting probably for the high white count. The tumor had extended across the mediastinum and was beginning to invade the tissues around the hilus of the other lung. The other main tumor mass was in the left upper quadrant of the abdomen where it completely surrounded the left adrenal but did not involve it. It extended downward and had

almost completely destroyed the left kidney. The upper portion of the left ureter was practically blocked, its entire wall was invaded by tumor. The tumor also had invaded the aorta and most of the retroperitoneal glands on the left side of the aorta. The tumor histologically is, I think, barely recognizable as carcinoma rather than lymphoma. However, it seems to have a rather definite alveolar arrangement in places and I feel quite certain it is a primary carcinoma of the bronchus.

DR. FREMONT SMITH: Were there any metastases to the spine?

DR. MALLORY: We found none, at least no gross ones, no large ones.

DR. FREDERICK T. LORR: In answer to the question regarding the physical signs, the findings over the right scapular region, "dullness and slightly diminished voice sounds but normal tactile fremitus," are not such as would be expected with bronchostenosis and consequent atelectasis if the bronchus is tightly closed, but might be present if the bronchus were partly open. The complex of signs with atelectasis and complete bronchial occlusion is dullness, diminished or absent breathing, voice whisper and tactile fremitus without bronchial breathing or egophony.

DR. COLBY: I think Dr. Fremont-Smith did a good job in discussing this case in spite of misleading suggestions such as mine. I for one thought it suggested tuberculosis of the kidney. The pyelogram alone would suggest that if you knew nothing about the case at all I think Dr. Holmes would agree that it was not a typical picture of primary tumor of the kidney. I saw the case on the ward. I could not connect up all these facts and could only say that I did not feel that it was a primary tumor of the kidney. I felt that the changes in the kidney were due to infection, inflammatory changes. It is interesting that in 1100 autopsies of patients dying with malignant disease at this hospital, forty of them—I think these figures are correct—showed evidence of metastatic disease of the kidney. So that metastatic malignancy involving one of the kidneys is distinctly not common, only a little over three per cent. It is also interesting in connection with this particular case that most frequently metastases from primary tumors of the lung or pleura were to the kidney. This series of cases was looked up by Drs. Mintz and Barney two or three years ago. So the primary tumors of the lung and pleura not infrequently do have metastasis to the kidney.

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CASE 21132

## PRESENTATION OF CASE

First Admission: A sixty year old American a probation officer, entered complaining of cough

About three months before entry the patient developed a cold which kept him in bed for two weeks and confined him to his home for one week more. During this illness he had about two or three attacks of chills and fever each week. He also had a painless cough with the production of creamy, somewhat tenacious, stringy phlegm. The volume of the sputum was never more than two tablespoonfuls, it was never bloody. One month later nine teeth were extracted. The extraction had no influence on the chills and fever or cough. About six weeks before admission the chills and fever increased in frequency, coming on almost every night. During the day, however, he was up and about doing his work although he noticed that he was getting progressively weaker. One month before entry he entered a sanatorium where he remained until his entry here. At the sanatorium x-rays of his chest showed a spot in the lower right lung for which he was given diathermy and actinic ray treatment. On the fifth day at the sanatorium, and two days after the diathermy treatment was started, he suddenly coughed up about half a cupful of purulent bloody sputum. The following night he coughed up some more. Since then his sputum gradually decreased in quantity and never contained blood. The cough also decreased and for the past two days he had almost no cough and no sputum. The sputum had never been foul smelling. He had had night sweats from the onset of his illness until one week before entry. He had never had pain in his chest but had had severe shortness of breath on exertion, which improved steadily, however, after he entered the sanatorium. During the month before admission the dyspnea had gradually decreased until at the time of admission there was practically none. There was no orthopnea. Only during the first week in the sanatorium had he had any fever. He had lost thirty-six pounds in weight during the past eight months and sixteen pounds in the past three months.

His family and marital histories are non-contributory.

There was no history of tuberculosis. He had had almost all of the childhood diseases, including scarlet fever. At eighteen he had measles. Four and a half years before entry his left kidney was removed. The pathologic diagnosis was hypernephroma.

Physical examination showed a well-developed and nourished man in no acute discomfort. The chest was barrel shaped, symmetrical and had poor expansion. There were a few crackling râles at both apices. The breath sounds were a little more prolonged in the right axillary area posteriorly. The heart was not remarkable. The blood pressure was 130/80.

The temperature was 98°, the pulse 84. The respirations were 20.

Examination of the urine was negative. The blood showed a red cell count of 4,200,000, with a hemoglobin of 70 per cent. The white cell count was 11,200, 81 per cent polymorphonuclears. A Hinton test was negative.

X-ray examination of the chest showed that the left side of the diaphragm was higher than the right. It was smooth in outline on both sides and moved well with respirations. There were two areas of density at the right base. One was linear and lay along the interlobar septum between the middle and lower lobes, whereas the other was rounded and sharply defined and lay in the middle of the lower lobe. The latter was 5 centimeters in diameter. There were no visible cavities in either area. Several areas of calcification were seen in both apices and infraclavicular regions. There were no mediastinal masses. The heart and mediastinum were in normal position.

He was discharged on the third day to recover from his respiratory infection and to return later for operation.

#### *Second Admission, four months later*

For the first three months after discharge he remained in bed and took many sunbaths. He had occasional cough with a small amount of thick brown sputum. On two occasions, however, he raised half a cupful of sputum. He had very little chest pain until two months before this entry at which time he awoke one morning with severe right chest pain, aggravated by breathing. From then on he found that if he lay on his right side too long the pain would recur. Except for pain he had felt quite well until one month before entry. He had gained eight pounds in weight and was feeling stronger. One month before admission, a week after he had begun to be up and around, he developed shortness of breath, felt weaker and began to lose weight. His appetite became poor. His temperature remained consistently around 98° in the morning and rose to about 100° in the evening.

Physical examination had not changed since his first admission. The breath sounds on the right were diminished.

The laboratory findings were essentially the same. The sputum was thin, mucoid in character and contained many cocci.

He received two air injections of 600 and 700 cubic centimeters before operation, and on the tenth day the right lower lobe was removed. He did well postoperatively and was discharged about one month after operation.

#### *DIFFERENTIAL DIAGNOSIS*

DR. FREDERICK T. LORD In view of the shortness of the time I might somewhat abridge this report and say of this sixty year old American white individual that seven months ago, at

the time this story was written, the patient had an acute respiratory infection spoken of as a "cold," during which, however as is uncommon with a "common cold," he had chills and fever for two or three weeks, and cough, which was painless, with purulent sputum not exceeding two tablespoonfuls and never bloody. That is the beginning of the disturbance. Now I might say further that he has continued to have a cough for the whole of the seven months and continued to raise brown sputum, and that on three occasions he has explosively expectorated a large amount of purulent sputum amounting to half a cupful. His temperature has been elevated, we do not know how constantly, but we may presume for several months. He had night sweats the first two months. We do not know about them since then. He had shortness of breath and lost a good deal of weight. That is the gist of the story.

In addition it should be noted that he had nine teeth extracted six months ago or one month after the onset, and that he had a hy perphroma of the kidney removed four and a half to five years ago. There is no history of tuberculosis.

That brings us to the physical examination, which was negative except for barrel shaped chest and poor expansion which might mean emphysema, râles at both bases and prolonged breath sounds—whatever that may mean—in the right axillary region posteriorly. I do not know what that statement means, but I suppose it refers to long expiration. He has a negative heart and normal blood pressure.

So far as the laboratory examinations are concerned, he has some anemia with leucocytosis and polymorphonuclear increase. Perhaps we might pass on to the x ray.

#### X RAY INTERPRETATION

Dr. GEORGE W HOLMES. The most striking thing in the x ray is this mass which lies in the angle between the liver and left border of the heart. In the anteroposterior view you notice that the mass is slightly lobulated, very sharply defined and of fairly even density. It does not look like an inflammatory mass so much as like a tumor. Above it in the lung field are several small dense spots, some in the apex. There are similar ones not so well marked on the left side. I should interpret these areas as having nothing to do with the large mass. They are perhaps due to obsolete tuberculosis. In the lateral view the large mass has much the same shape. It is a solid mass rather than a wafer like mass, more or less spherical in shape. The edges are sharp. It lies in the posterior part of the chest, probably in the lower lobe. It does not interfere with the diaphragm and as far as I can make out is not connected with the pleura.

We have a distinct outline of the interlobar septum on the right, suggesting thickening of the interlobar pleura probably explained by old tuberculous infection.

Dr. LORD. There is nothing remarkable in the heart, it is not displaced! I ask it because of the record. It says that the left side of the diaphragm is high. I cannot understand it.

Dr. HOLMES. Normally the left diaphragm should be a little lower than the right. In this anteroposterior view the left is at about the same level as the right. I think that may be a debated point.

Dr. Lord. Are there two shadows just above the diaphragm, underneath the sternum?

Dr. HOLMES. Those could be areas within the lung. If they were directly under the sternum they of course would not be seen in this film.

Dr. DONALD S KING. This patient had had previous lipiodol injection. Could not the x ray appearance, Dr. Holmes, be explained by retained lipiodol?

Dr. HOLMES. Yes, of course. The other possibility is calcification in the artery—I should only consider them interesting shadows and not pay much attention to them.

Dr. KING. The original film is not here but a comparison of this film with the one at hand showed that the tumor had increased appreciably in size in five months.

#### DIFFERENTIAL DIAGNOSIS CONTINUED

Dr. LORD. We will pass on to the consideration of what this might be. I might say in the first place that we should like to know about the presence of tubercle bacilli in the sputum.

Dr. KING. There were no tubercle bacilli in the sputum.

Dr. LORD. In such a case as this, one might search for elastic tissue in the sputum of course. I would like to ask whether there had been a bronchoscopy. Nothing is said about the result of these investigations. I hear no response. Perhaps I should not know these facts.

With respect to the diagnosis, I think he had old, inactive tuberculosis. Râles do not necessarily indicate activity. There is a secondary type of tuberculous process in a sensitized individual. In addition to that he has a respiratory infection. I mean in addition to a tuberculous process he probably has a non tuberculous inflammatory process. I shall proceed rather cautiously and call it a bronchopulmonary infection. I am not able to exclude an abscess, but I do not believe it is abscess. I do not believe the teeth extraction had anything to do with the symptoms because the symptoms began first. The teeth extraction was incidental. It is rare to have abscess without foul sputum, and no cavity is shown by x ray. I am thinking that he has infection, that the mass shown

by x-ray is not the focus of infection but it is somewhere else, perhaps in this neighborhood. He may have a bronchiectasis. It is reasonable to think that there may be a trapping of secretion somewhere, because on three occasions he raised half a cupful of expectoration explosive-ly and we have to explain it in some way. The best explanation is that he had a plugged bron-chus with trapping of secretion below it. On release of the bronchial plug there was explosive expectoration.

Now we come to the explanation of the homogeneous sharply outlined mass, and, as Dr Holmes suggested, tumor is the first thing that one would think about. In view of the hypernephroma four and a half or five years ago one must think of the possibility of a metastasis from the tumor before it was removed. We know that hypernephromas have a very grave prognosis in spite of removal of the tumor. Very few patients live three to five years without recurrence of the growth, so that I cannot leave hypernephroma with metastasis to the lung out of consideration. In fact I should think that was the best bet on this mass here, but of course one would also have to think of a primary intra-thoracic tumor, and the first choice in that group would be a bronchiogenic carcinoma. One would have to think also of a teratoma which had become malignant and a neurofibroma which had become malignant.

I make a diagnosis then of pulmonary tuberculosis. He has also, I think, a non-tuberculous bronchopulmonary infection with probable bronchostenosis in consequence of pressure on the bronchus from without by the mass and a question of bronchiectasis. The mass is, I think, malignant disease probably secondary to the hypernephroma.

#### CLINICAL DISCUSSION

**DR KING** Operation was recommended on this patient because Dr Churchill had previously operated successfully upon a patient who had had a kidney removed for carcinoma and had one solitary metastasis in the lung. Some of you have seen the films of the patient.

The patient came to me originally because of symptoms suggesting pulmonary tuberculosis. I found râles at the right apex and a chest x-ray was ordered. This original film, taken in November 1931, shows tuberculosis of the right apex and a lesion in the left lung which had the appearance of a metastatic tumor. After seeing the x-ray we searched further for a source of a metastasis and found a large kidney which was removed by Dr Barney in April 1932. The next slide shows the pathological specimen. After the removal of the kidney she had x-ray treatment for the pulmonary metastasis. In spite of this treatment, however, the lung tu-

mor increased in size as shown in the next film which was taken in July 1933. Complete x-ray study of the patient at this time showed no metastases in the bones or any other region which could be investigated, and after careful thought operation for removal of what was apparently a solitary metastasis seemed justified. In July 1933 Dr Churchill removed the tumor and the lingua of the left upper lobe in which it was located. The patient made an excellent recovery and up to the present time there is no evidence of carcinoma anywhere in the body.

With this successful case behind him Dr Churchill therefore felt justified in operating upon the case which Dr Lord has discussed. The preoperative diagnosis was pulmonary metastasis from a hypernephroma. As Dr Lord said, there was definite abscess beyond the bronchus which had been obstructed by the tumor. Operation was performed in October 1934, and the patient now feels perfectly well and has no symptoms. Recent x-rays of the lung show no pulmonary recurrence.

#### CLINICAL DIAGNOSIS (PREOPERATIVE)

Metastatic hypernephroma

#### DR FREDERICK T. LORD'S DIAGNOSES

Metastatic hypernephroma

Pulmonary tuberculosis

Bronchiectasis?

#### PATHOLOGIC DIAGNOSES

Bronchiogenic carcinoma of the lung, squamous cell type

Bronchiectasis

#### PATHOLOGIC DISCUSSION

**DR TRACY B. MALLORY** This colored lantern slide shows atelectatic lung at the top, then a large tumor mass filling most of the lobe. At the base below the tumor you can see a definitely dilated bronchus filled with somewhat greenish purulent secretion, a typical bronchiectatic cavity. At the time of operation I attempted to make frozen sections of the tumor but found it so necrotic that I could not say any more than that it was a malignant tumor. When our better sections came through it became obvious that it was not a hypernephroma. The major part of the tumor was necrotic, but there we could find masses of distinctly acidophilic tumor cells which were flat, occasionally slightly spindle shaped, and in many places very definitely characteristic of squamous epithelial cells. There can be no question that this is a squamous cell tumor which is perfectly consistent with a primary bronchial origin. We were naturally extremely interested to find out if there might have been any mistake about the original diagnosis of hypernephroma of the kid-

ney and succeeded in locating the slides from the kidney tumor at another hospital. It was a perfectly typical, highly vacuolated clear-cell renal adenocarcinoma and I think one can quite flat-footedly say this tumor in the lung had nothing to do with the original tumor in the kidney. Careful study of the gross specimen tends to confirm the theory of primary bronchial origin since the tumor projected into and grew along the bronchial tree which is extraordinarily rare,

if it ever happens, in metastatic tumor I think in retrospect one can say that we practically never do see pus trapped behind a metastatic tumor in the lung. I cannot remember seeing abscesses distal to pulmonary metastases in any case in a number of years. Would you agree with that from the clinical point of view?

DR. LORD I would off hand I cannot think of any particular case

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## PSYCHOLOGISM AND MEDICINE

THAT the practice of medicine by unlicensed persons constitutes a serious menace to the community all would agree, but what constitutes the practice of medicine justifies discussion and is the occasion for grave differences of opinion. An immediate mist surrounds the word "medicine". too often it is restricted to the use of drugs, and such limitation is found in antiquity. But in the common sense view of to-day the practice of medicine means the practice of the healing art, and its dominant purpose is to make well a person who is sick. By warranted extension, prevention and relief are included. Several qualifications have appeared, and must be noted. Intelligent practice depends on knowing with what one is dealing and so diagnosis is held to be essential. Another qualification is that the healer should hold himself out to be a healer. Another criterion (important in principle, but not essential in practice however) is that the healer should receive some pay for heal-

ing or for the services rendered. The final factor is that the healer should use material means. The spoken word is as material a means as the surgeon's knife.

The application of these just criteria indicates somewhat the extent of abuse and the irrationality of much legislation. A limitation occasionally explicit and cited in court is that nothing in the medical practice act shall be interpreted as interfering with the exercise of religion. In Massachusetts, the practice of Christian Science is specifically excluded from the prohibition of the law. What rational justification is there for exempting the Christian Scientist who communicates with a seeker by material means and who accepts material in exchange, no matter by what words obfuscation of the true nature of the transaction is sought?

An abuse growing in importance is the practice of medicine by psychologists, that is, by so-called professional psychologists. Perhaps some of them are honest and sincere in their contention that they are not trespassing in the field of medicine they should know better. Their chief resource is "psychoanalysis" which indeed covers a multitude of vagaries but which substantially represents an important contribution to psychology and psychiatry. The practice of psychoanalysis, for the purpose of restoring to normal the mental workings of the person who has aberrations from normal (and usually such aberrations cause pronounced suffering or disease) is the practice of medicine just as truly as is the amputation of a limb. The sophist says, however, that he merely "analyzes" and nature heals. With what contempt would Paré have laughed at a contemporary who claimed that Paré was not practicing surgery because he said, "I cared for him, but God healed him."

This abuse is apparently growing, and is a manifestation of commercialism in "high" places. It constitutes a real danger, for no mere psychologist is fitted by his training or experience to determine the physical condition of the sufferer. Both the body and the psyche must be considered.

## DEAN EDSELL'S REPORT

A number of important subjects have been considered by Dean David L. Edsall, of the Harvard Medical School, in his annual report for the past year, a report that may be considered somewhat in the nature of parting advice from one whose major interest has been the School for a number of years. Dr. Edsall points out that a striking departure from previous conditions with results of large influence in both teaching and research has been made in the clinical branches. The old plan of part-time teaching and research by clinicians whose pri-

mary interest was of necessity in the practice of medicine has been replaced in the major and some of the minor departments by plans which make university and hospital work "the dominating activity with a group of men that are chiefly responsible for the affairs of each department, and they are provided with living salaries."

These results have been very advantageous, although costly, and there are many who believe that the teaching of students by part time men whose major interests are in the field of practice is an important adjunct to be safeguarded.

A number of other subjects have made relatively little progress in proportion to their importance, in part due to their separation into very specialized fields with slight contacts with the methods and viewpoint that have developed in the more rapidly advancing fields. In one of these, otology, work that has been going on in the Physiological Department of the Medical School seems to be bearing fruit. In dermatology a marked degree of specialization and separation from other fields of medicine has worked disadvantageously to both sides. Orthopedic and genito-urinary surgery have been given inadequate facilities for the study of their problems in a manner suited to their importance.

Other fields in which there is immediate need for study and the application of knowledge are those of medical economics and the question of the social influences causative of disturbed health. In the former the Medical School has already taken up some work, and in the latter the School of Public Health is attempting to open the way to methods of study. In the natural sciences, studies in physics are expected in the future to show an increase in importance comparable to what has occurred in the chemical and biological fields in recent years.

It is in the field of psychiatry however, that the greatest amount of change is necessary, for no individual field in the domain of health is so large a cost to the State, and in no field of medicine has less been done, in proportion to the importance of the subject itself in most places in this country. Part of the difficulty in psychiatry has been a marked degree of specialization by which the subject became more and more detached from contacts with the general medical field, its work having been done for many years almost entirely in separate hospitals so that there was very little contact between persons working in those hospitals and the other members of the profession.

Psychiatry certainly must continue to be an independent and dignified specialty in its own right, with vast areas of land yet to be brought under cultivation, not subservient to medicine or neurology or any other branch of the profession, but the interests of both medicine and psychiatry will be furthered by a closer alliance

between the two. Most of those active in other fields of medicine are now poorly trained in psychiatry, and psychiatry has missed the help in studying problems that come from close contact with persons in different but related fields.

This lack of contact and of knowledge is probably one reason why comparatively few select psychiatry as a life work, this and the naturally greater appeal of the more spectacular fields, those where immediate results can be visualized and where advances have been more rapid. Great expectations, therefore, are focussed on the new unit in psychiatry at the Massachusetts General Hospital, made possible by a temporary grant of money, which offers the promise of a considerable enlargement of the amount and type of research work to be done in psychiatry and allied conditions. This unit will have the advantage of a close liaison with the McLean Hospital in Waverley, as well as offering members of the McLean staff the opportunity of working in a general hospital.

#### REPORT OF THE COMMONWEALTH FUND

THE Commonwealth Fund has just issued as its sixteenth annual report a document worthy of perusal in that it shows the amazing scope and variety of this particular philanthropic organization's activities. Epitomized in its opening paragraph, "the Commonwealth Fund has continued in the past year to throw its weight in the direction of bettering rural health, enlarging medical knowledge, strengthening psychiatric service, and fostering international friendliness."

During the year ending September 30, 1934, this report records the use of \$1,720,514.54 for philanthropic purposes and calls attention to the need of better medical service, particularly in small towns and rural communities. Among these purposes has been the encouragement of the six rural hospitals which it has so far sponsored to shape the conditions under which the doctor works with definite educational ends in view. In so far as the rural hospital makes the older men in practice increasingly self critical, according to the Fund's belief, and helps to counterbalance the pull of the larger cities on ambitious younger men, it can be counted a constructive force in rural medicine.

The rural health department, also, may be an educational force as well as an indispensable agent for the protection of the community, and a basic policy of the Fund is to foster the de-

velopment of its possibilities in both directions. Activities similar to those carried on in Tennessee for the past ten years are now under way in Mississippi and Massachusetts. In Massachusetts, in 1931, the Fund began experimenting with district health service, when sixteen towns in the southwestern part of the state were grouped as one district, and fourteen towns were so united in the Nashoba Valley. In the southern Berkshire area public health performance has been raised from a rating of 447 points in 1929 to 732 points in 1933, and in the Nashoba district a similar improvement has taken place from 367 to 669 points. A similar experiment in the pooling of health services is in progress in Maine in the district surrounding the Farmington Hospital, a full-time health department is maintained in Barren County, Kentucky, and for the past four years appropriations have been made to the state health department of New Mexico to establish a minimum of nursing service in a number of counties.

In Tennessee, Mississippi and Massachusetts, scholarships are provided for postgraduate training for nurses, both in the counties or districts specially served and elsewhere. For the National Organization for Public Health Nursing a survey has been published reporting the present status of public health nursing in twenty-eight cities, towns and counties in different parts of the country.

Studies have been made on practical methods of recording and analyzing public health activities, and, as a contribution to medical education, postgraduate fellowships have been offered to selected men on the rural hospital staffs with which it is directly concerned and elsewhere in Tennessee, Mississippi and Massachusetts. Postgraduate courses have been given at Vanderbilt University, at Tulane and at Harvard for physicians of these three states. As further contributions, short courses have been offered on special subjects, as in Virginia, and a group of scholarships is available each year at Vanderbilt, Tulane, and Tufts to young men who will agree to practice in rural communities after graduation.

Contributions have been made to research, such as the study of rheumatic fever being carried on at the New York Hospital and the House of the Good Samaritan in Boston, and the pneumonia serum study of the Massachusetts Department of Public Health. To complete the summary, mention must be made of the Commonwealth Fund fellowships enabling British students to study in the United States, the furtherance of mental hygiene projects both in the United States and Great Britain, and the studies being undertaken by the Legal Research Committee in administrative law and the general field of government.

## DOCTOR GEORGE HOYT BIGELOW

The tenaciously held hope of the restoration of Dr George H Bigelow to his family and his official life, was shattered by the recovery of his body from Sudbury reservoir, basin 3, March 23, 1935. With his unexplained disappearance December 3, 1934, the assumption of an attack of amnesia was the natural reaction of his relatives, because of many recorded instances of victims of this peculiar mental affliction.

Dr Bigelow's career had been watched with interest and with concern at times by his professional confreres because of the exhibitions of phenomenal mental acumen and physical energy. His behavior often seemed to show that the rapidity of his mental processes exceeded the resources of vocal expression, but in the finished sentences there was never uncertainty as to his reasoning and conclusions.

The problems of humanity aroused a militant spirit which drove him to the expenditure of energy far beyond the resources of most men. When he saw the solution of a complicated situation, everything was secondary to its accomplishment.

Popular as a speaker, inspiring as a leader, the demands on his strength were so many that he gave little time to needed recuperation. In debate or official action, he never compromised with opposition which seemed to him questionable. The only weakness of men of his type seems to be inability to realize the necessity of due care of the human organism. The one consolation left to the friends of Dr Bigelow is that his accomplishments surpassed those of most men whose lives cover a longer span.

We are especially indebted to Dr Bigelow for progress in his chosen field of public health, which contributed in a large measure to the safety and comfort of life. We heartily express to his family our sympathy in their bereavement.

## THIS WEEK'S ISSUE

CONTAINS articles by the following named authors

Root, HOWARD F. A.B., M.D. Harvard University Medical School 1919. Medical Staff, New England Deaconess Hospital. Assistant in Medicine, Courses for Graduates, Harvard Medical School. His subject is "Acute Hepatitis in a Diabetic with Severe Acidosis and Suppression of Urine." Page 545. Address 81 Bay State Road, Boston, Mass.

Evans, THEODORE S. B.A., B.S., M.D. Columbia University College of Physicians and Surgeons 1921. FACP. Attending Physician, Grace Hospital. Assistant Attending Physician, New Haven Hospital. Instructor, Yale Medical School. Assisting Physician, Yale Uni-

versity Department of Health His subject is "A Case of Glomerulonephritis with Three Azotemic Episodes." Page 547 Address 66 Trumbull Street, New Haven, Connecticut.

**ROGERS, HORATIO A.B., M.D.** Harvard University Medical School 1923 F.A.C.S Assistant Surgeon, Pondville Hospital Assistant Surgeon to Outpatients, Massachusetts General Hospital. Consulting Surgeon, Massachusetts Eye and Ear Infirmary and Heywood Memorial Hospital, Gardner Visiting Surgeon, Vincent Memorial Hospital Assistant in Surgery, Harvard Medical School Address 264 Beacon street, Boston, Mass. Associated with him is

**NATHANSON, IRA T. M.S. M.D.** Northwestern University Medical School 1930 Resident Surgeon, Pondville Hospital. Address Pondville Hospital, Wrentham, Mass. Their subject is "Chronic Cystic Mastitis. Practical Management in a Cancer Clinic." Page 551

**JOHNSON, HERBERT LESTER. M.D.** Tufts College Medical School 1914 F.A.C.S. Courtesy Staff, Faulkner and St. Margaret's Hospitals. His subject is "An Exposition of the Preparation and Administration of Amniotic Fluid Concentrate." Page 557 Address 520 Beacon Street, Boston, Mass.

**HARTWELL, JOHN A. Ph.B., M.D.** Yale University School of Medicine 1892 F.A.C.S. Former Director of Surgery at Bellevue Hospital. Clinical Professor of Surgery, Cornell University Medical College. Director The N.Y. Academy of Medicine. His subject is "Your Profession and Society" Page 559 Address 2 East 103rd Street, New York City

**CHADWICK, HENRY D. M.D.** Harvard University Medical School 1895 Formerly, Superintendent of the Westfield State Sanatorium, and Tuberculosis Controller in Detroit, Michigan. Now, Massachusetts Commissioner of Public Health. His subject is "The Prolongation of Life." Page 560 Address State House, Boston, Mass.

### The Massachusetts Medical Society

#### SPECIAL MEETING OF THE COUNCIL

A SPECIAL meeting of the Council of the Massachusetts Medical Society will be held in John Ware Hall Boston Medical Library, 8 The Fenway, Boston, on Wednesday, April 3, 1935 at 12 o'clock, noon.

#### Business

- 1 Reading record of last meeting in abstract.
- 2 Report of Committee of Arrangements for Annual Meeting

- 3 Consideration of the Report of the House of Delegates of the American Medical Association, February 15 and 16, 1935
- 4 Incidental Business.

**ALEXANDER S BEGG,**  
*Acting Secretary*

Boston, March 26, 1935

Councillors are reminded to sign one of the attendance books before the meeting

#### NOTICE TO MEMBERS

INSTRUCTIONS of the Massachusetts Medical Society Council require that names of members in arrears be taken from the mailing list of the *New England Journal of Medicine* March 1. If you fail to receive the *Journal*, this may explain the reason.

#### SECTION OF OBSTETRICS AND GYNECOLOGY\*

<b>THOMAS ALMY M.D.,</b>	<b>C J KICKHAM M.D.,</b>
<i>Chairman,</i>	<i>Secretary</i>
140 Rock Street,	524 Commonwealth Avenue,
Fall River Mass	Boston Mass.

#### WHAT IS THE MOST EFFICIENT TREATMENT OF CHRONIC EROSION OF THE CERVIX?

In answer to this question it is essential to first determine its causative factor. Infection is the major factor in its etiology as the cervix is exposed to sex trauma, lacerations and instrumentation throughout the sex life of the patient. Gonococcus, streptococcus, staphylococcus and other bacteria penetrate the cervical canal by such means. Twenty per cent of the gonorrhreal and forty per cent of the non gonorrhreal cases are productive of erosions. Therefore all erosions are not necessarily gonococcal cervicitis but are more often simply chronic conditions of the non-specific type.

In the treatment of cervical lesions—namely erosions, evasions, endocervicitis, and lacerations, the underlying histopathology must be considered. Various methods of eradication are used as the lesions often overlap and demand definite procedures. This is due to the fact that the accompanying infection is the factor which produces the symptomatology and morbidity not the erosion itself. Various measures have been advocated in an attempt to destroy the infection, in the complicated racemose glands, which tends to make the lesion a chronic one. These may be classified as chemical, thermal, electrical and surgical.

Local applications of various antiseptic drugs are useless in the chronic type of lesion as they fail to penetrate the underlying pathology.

A series of short selected articles by members of the Section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the Section.

These drugs such as iodine, mercurochrome, aniline dyes, and silver solutions may be effective in superficial lesions. The local use of powders vaginally is mechanical and non-medical except in *Trichomonas vaginalis*. The local injection of two per cent mercurochrome or one per cent methylene blue in saline solution into the cervical tissue may work in specially selected cases but is not worthy of routine use.

In the thermal and electrosurgical methods, diathermy, coagulation and high frequency currents are used. With diathermy the temperature can be elevated to only 116 degrees Fahrenheit without physiological destruction. Cautery, which involves coagulation, lies between 122 and 140 degrees Fahrenheit, while the cutting high frequency current is in a range above 160 degrees Fahrenheit.

The use of heat either by the Remington, Cherry, Hyams or Dickinson method is contraindicated during an acute cervical infection or in the presence of acute or subacute salpingitis as it may produce a parametric infection, pelvic abscess or peritonitis.

The Remington and Cherry methods are coagulative in type, the Dickinson method involves the use of nasal tip cauteries, while the Hyams is a high frequency cutting method which removes the entire cervical mucosa in one sitting. By the use of these cautery methods one or more applications at two or three week intervals may be required to destroy the abnormal epithelium and deep infection.

With the Hyams' method, which the writer considers the best, and which, borne out in an experimental investigation of these methods in animals, was carried out in the Surgical Research Laboratories of the Boston City Hospital by Boland and Maddock, the coning is accomplished in one sitting and six to eight weeks are required for healing.

In some cases if the cervical canal infection is corrected, the cervix will recede to normal due to drainage, and less destruction is required. This last principle depends upon the operator's experience and judgment in the use of these modalities. Following any of these methods profuse discharge of a watery character is produced for about ten days due to the slough which is present. The slough gradually separates and the cervix shrinks to normal. Healing depends upon the extent of the lesion. Douches and enemas are contraindicated while the slough is present lest bleeding occur and hemorrhage be produced. Gentleness is required as the operator, unless acquainted with the use and application of these modalities, can encounter severe difficulty. These electrosurgical methods should not be applied unless the operator is able to cope with the situation if surgical intervention is required. Excision of precancerous and malignant specimens for biopsy has removed the dan-

gers of reimplantation and dissemination of cancer cells in questionable cases. The Schiller test is indicated in all cases before either cauterization or removal is attempted. These electro-surgical methods are not opposed to regular operative procedure, but their application when applied and indicated may afford an answer to a difficult problem. The fact that these methods can be performed as an office procedure and saves hospitalization is of advantage.

#### SECOND ANNUAL POSTGRADUATE MEDICAL EXTENSION COURSE

The following sessions have been arranged by the Committee for the week beginning March 31.

##### Barnstable

Sunday, March 31, at 4:00 P.M., at the Cape Cod Hospital, Hyannis. Subject: Obstetrics and Gynecology (Third Session) John I. B. Vail, M.D., Chairman.

##### Berkshire

Thursday, April 4, at 4:30 P.M., at the St. Luke's Hospital, Pittsfield. Subject: Obstetrics and Gynecology (Third Session) Albert C. England, M.D., George S. Reynolds, M.D., Chairmen.

##### Bristol North (Attleboro Section)

Tuesday, April 2, at 4:00 P.M., at the Sturdy Memorial Hospital, Attleboro. Subject: Endocrinology (Third Session) William M. Stobbs, M.D., Chairman.

##### Bristol North (Taunton Section)

Wednesday, April 3, at 7:30 P.M., at the Morton Hospital, Taunton. Subject: Obstetrics and Gynecology (First Session) Arthur R. Crandall, M.D., Chairman.

##### Bristol South (Fall River Section)

Monday, April 1, at 4:00 P.M., at the Stevens Clinic of the Union Hospital, Prospect Street, Fall River. Subject: Surgery (Third Session) Eugene A. McCarthy, M.D., Sub-Chairman.

##### Bristol South (New Bedford Section)

Friday, April 5, at 4:00 P.M., at the St. Luke's Hospital, New Bedford. Subject: Endocrinology (Third Session) Harold E. Perry, M.D., Chairman.

##### Essex North

Tuesday, April 2, at 4:00 P.M., at the Hotel Bartlett, 95 Main Street, Haverhill. Subject: Obstetrics and Gynecology (First Session) Francis W. Anthony, M.D., Chairman.

##### Essex South

Tuesday, April 2, at 4:00 P.M., at the Salem Hospital, Salem. Subject: Cardiovascular Disease (Second Session) Walter G. Phippen, M.D., Chairman.

**Franklin**

Wednesday April 3 The session will be omitted on this date.

**Hampden**

Thursday, April 4 at 4:00 P.M. at the Academy of Medicine, Professional Building 20 Maple Street, Springfield and at 8:00 P.M. at the Holyoke City Hospital Holyoke. Subject The Common Neuroses and Their Treatment in Private Practice. The Psychose—Early Diagnosis. George L. Schadt M.D., Chairman.

**Middlesex East**

Wednesday April 3 at 4:00 P.M. at the Melrose Hospital Melrose Subject Cardiovascular Disease (Third Session) Joseph H. Fay M.D., Chairman.

**Middlesex North**

Friday April 5 at 7:00 P.M. at the St. John's Hospital Lowell. Subject Cardiovascular Disease (Second Session) Frederick P. Murphy M.D. Chairman.

**Norfolk (Faulkner Hospital Section)**

Monday April 1 at 4:00 P.M. at the Faulkner Hospital, Jamaica Plain Subject Obstetrics and Gynecology (First Session) Hugo B. C. Reimer M.D., Chairman.

**Suffolk**

Monday April 1 at 8 P.M. in Sprague Hall, Boston Medical Library Boston Subject Gynecology (One Session) Reginald Flitz M.D., Chairman

**Worcester (Milford Section)**

Thursday April 4 at 8:00 P.M. at the Milford Hospital, Milford. Subject Surgery (First Session) Joseph L. Ashkins, M.D., Chairman.

**Worcester (Worcester Section)**

Wednesday April 3 at 7:30 P.M. in the Nurses' Home of the Worcester City Hospital, Worcester Subject Dermatology and Syphilis Erwin C. Miller M.D., Chairman

**Worcester North (Ayer Section)**

Thursday April 4 at 8:00 P.M. at the Ayer Community Memorial Hospital Ayer Subject Surgery (Third Session) Frank S. Bulkeley M.D., Chairman.

**MASSACHUSETTS LEGISLATIVE NOTE**

**H. 1458.** A bill to create a board of examination and registration to regulate the practice of magnetic healers.

Report, leave to withdraw  
Accepted in House.

**MISCELLANY****APPOINTMENTS AT THE TUFTS COLLEGE MEDICAL SCHOOL**

Dr Edward A. Joy has been advanced to the position of assistant professor of anatomy. Dr Carmi R. Alden became assistant professor in Materia Medica.

Dr Julius Abramson Dr David Littman, Dr Irving Schiller and Dr Morton Stern are appointed as instructors.

Dr Selwyn L. Steel and Dr Robert L. Phillips were appointed assistants in the Department of Medicine and Dr Thomas E. O'Brien assistant in the department of clinical medicine in the Dental School.

**THE ANNUAL DINNER OF THE TUFTS COLLEGE MEDICAL SCHOOL ALUMNI ASSOCIATION**

Nearly four hundred members of the Alumni Association of Tufts College Medical School attended the annual dinner at the University Club March 29 1935

Three of the oldest living graduates were present in the persons of Dr Edward E. Thorpe of Newton Centre Dr William A. White of Roxbury and Dr Charles D. Knowlton of Cambridge

The following named members were selected for a five-year term to the Executive Council Dr Elmer S. Bagnull of Groveland Dr Frank H. Dunbar of Boston Dr Samuel F. Gargill of Boston Dr Fredrick W. O'Brien of Boston and Dr James J. Regan of Waltham.

Dr Robert T. Phillips secretary treasurer announced that the Tufts College Medical School graduates have a larger representation in the membership of the Massachusetts Medical Society than any other school.

Seated at the speakers table were Dr Louis E. Phaneuf, president of the alumni association Dr A. Warren Stearns, dean Dr Alonso K. Paine, toastmaster Dr Louis Hermanson, Dr John L. Doherty Dr Benedict F. Boland Dr Edward M. Hodgkins, all of Boston Dr James B. Bigelow Holyoke Dr W. F. Patterson Charlestown Dr Louis A. O. Goddu, and Dr Frank H. Dunbar also of Boston.

**"OLEO RACKETEERS SENTENCED OTHER FOOD CHEATERS PUNISHED**

The government's case against the racketeers who packed oleomargarine in butter wrappers was terminated February 13 at Boston, Mass. with a fine of \$2,000 against the Fellowship Cheese Co. Stoneham Mass. a sentence of eighteen months in the Lewisburg penitentiary for Vincent Bruzzese, the brains of the outfit and a fine of \$500, suspended against Katherine McDevitt, who was placed on probation for one year. This action was prosecuted under the conspiracy section of the United States penal code because the Federal Food and Drugs Act does not permit the imposition of penalties which are commensurate with the fraud involved in a case of this sort.

In October, 1934, the firm of Chapin & Adams, Boston, Mass., was fined \$100 for having made shipments of the same butter substitute labeled as butter. In January, 1935, Morris Silver of Manchester, N. H., also implicated in these dealings, was fined a total of \$750 for violation of the Food and Drugs Act, evasion of tax, and conspiracy with Harry T. Withycomb and Vincent de Mauro to attain these ends. Both Withycomb and de Mauro have pleaded guilty.

A form of adulteration relatively rare to-day brought a fine of \$100 to Milnarick Brothers, River Rouge, Mich., who mixed corn syrup and sugar with their honey to increase their profits. The jars of this mixture, which was labeled "Honey," were also short weight.

The Sphinx Chocolate Corporation was fined \$300 in Federal court at Brooklyn, N. Y., on February 6, for having shipped chocolate cordial "cherries," filled with nothing but artificially colored seedless grapes in syrup, like the "Cherri Berri Decorettes" recently proceeded against, packed by a New Jersey fruit producer and canner.

The makers of Kal, Inc., and Bernard Ackerman, shippers of "Kal," were fined a total of \$153 at Los Angeles. "Kal," a compound of lime, phosphorus, rice by products, a malt product and cocoa, was labeled with claims of benefit in tooth decay, acidosis, nervous irregularities, rickets, anemia, pyorrhea, glandular disorders, high and low blood pressure, asthma, hay fever and tuberculosis, which claims the government alleged were false and fraudulent, as an article of such composition could have no appreciable effect against those disease conditions. "Kal" sold at sixty five cents a pound.

Reports of the following terminations of prosecutions for violation of the Food and Drugs Act have also been received. R. E. Cobb, Co., Valley City, No. Dak., Arnold Cooperative Creamery Co., Arnold, Nebr., and Hattiesburg Creamery and Produce Co., Hattiesburg, Miss., low fat butter, fines of \$10, \$50, and \$50, respectively. Nash-Underwood Co., Inc., Chicago, Ill., prepared mustard adulterated with mustard bran, fine \$100. Ray-Maling Co., Hillsboro, Ore., decomposed canned prunes, fine \$180. C. F. Simonin's Sons, Inc., Philadelphia, Penna., short volume salad oil, sentence suspended, defendant placed on probation, and PX Products Co., Detroit, Mich., "PX" for eczema, rashes, boils, sores, infections, tonsilitis, pyorrhea, trench mouth and female disorders, which claims were false and fraudulent, fine \$100. The cases were instituted following seizure of the violative shipments.

Other cases terminated were Continental Baking Co., Ogden, Utah, and Continental Baking Co., Spokane, Wash., short weight bread, fines of \$26 and \$30, respectively. John McGee and Lloyd Dornan, Fennville, Mich., currants bearing poisonous spray, fined \$25 each. Planters Cotton Oil Co., Dallas, Texas, Hespenheide and Thompson, York, Penna., the Welty Co., Chicago, Ill., "Ker Ene," labeled as a treatment for skin and scalp diseases, pyorrhea, croup, quincy, ringworm, tonsilitis, bronchitis, laryngitis, pneumonia, hay fever, catarrh, ulcers,

rheumatism, sciatica, lumbago, gout, neuralgia, piles, snake bite and tape worms, in which conditions the product would be ineffective, fine \$2, and Fred F. Wanner & Sons, Philadelphia, Penna., a standard drug product (capsules Diginine), fine \$25.

During February, there were seized thirty-one shipments of tomato puree, catsup and paste, the Food and Drug Administration reports. The goods, packed in California, Ohio, Indiana, Kentucky, Utah, and New York, were in every instance adulterated because of the presence of mold, arising from the use of partially decomposed raw tomatoes. One lot of canned tomatoes shipped by a packer in Baltimore, Md., found to contain maggots, was also seized. Other violations in this class are shown by the seizures of the following commodities during the same period: wormy fresh spinach, decomposed canned mackerel and frozen shrimp, worm infested whitefish, insect-infested canned huckleberries and raspberries, filthy cream, and ten thousand pounds of dirty butter.

Fraudulent salad oils are still on the market. Three lots were picked up in Rhode Island and Massachusetts, bearing misleading statements as to composition, deceptive designs and pictures, and Italian wording to heighten the foreign effect. One brand, a mixture of vegetable oils with a small proportion of olive oil, was labeled "Pure Olive Oil."

Poison spray residues resulted in the seizure of 3,500 bushels of apples grown in Michigan, New Jersey, Idaho and Washington, and found in interstate commerce. Sweet pickles, containing benzoate of soda without label information to that effect, short in volume, and one lot of which contained saccharin, were seized at Kansas City, Kansas. They had been shipped by a manufacturer in St. Louis, Mo. Other products seized during February were short weight honey, brandy with an overstatement of the amount of alcohol present, two lots of below standard canned peas, a shipment of short weight petrolatum, and a large lot of old and deteriorated pharmaceuticals shipped by the Southwestern Drug Corp., Houston, Texas, to New Orleans, La.

Patent medicines confiscated last month included "Pyorrhix Chewing Gum" labeled as a preventive of pyorrhea, "Poloris Dental Poultice" for toothache, abscess, pyorrhea and gingivitis, "Lucorol" for women, "Tussamag," a cough syrup bearing claims for bronchitis, asthma, whooping cough, pneumonia and tuberculosis, "Ditman's Sea Salt," an impure rock salt labeled as a treatment for rheumatism and debility, "Chlorine Respirine," a mixture of petrolatum with calcium compounds, for bronchitis, laryngitis, whooping cough and influenza, "Kay's Ointment," "Kay's Leg Powder" and "Kay's Oil," for leg sores, "Vaporine Ointment" for coughs, congestion, catarrh and tonsilitis, and "Antiseptine," which was found to be not antiseptic, and bore claims of benefit in cases of laryngitis, pharyngitis, tonsilitis, sore throat, rheumatism and dandruff. In all instances, the government alleged that the medicinal claims made for these articles were in excess of their possibilities—U. S. Department of Agriculture.

HEALTH OFFICERS MONTHLY STATEMENT  
OF VENEREAL DISEASES REPORTED

JANUARY 1935

This statement is issued monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The following reports were received from State Health Officers.

State	Syphilis		Gonorrhea	
	Cases Reported During Month	Monthly Case Rates per 10,000 Population	Cases Reported During Month	Monthly Case Rates per 10,000 Population
Connecticut	234	1.42	154	.94
Maine	67	.34	49	.61
Massachusetts	410	.95	468	1.09
New Hampshire (b)				
Rhode Island	98	1.40	112	1.60
Vermont	19	.53	29	.80

(b) Has been reporting regularly but no report received for current month

—Treasury Department Public Health Service.

## CORRESPONDENCE

## ART AS EXHIBITED BY DOCTORS

Editor *New England Journal of Medicine*

Why should doctors be interested in art?

Inasmuch as they are just people doctors should be interested in art, primarily in appreciation of craftsmanship and of beauty in appreciation of the loveliness of form and pattern and color—in appreciation of that indefinable oneness with the world—apart from the complications of civilization (so-called)—that is one of the fine joys of life.

Lovely painting like good music, like the best poetry may be for those originally sensitive and sensitized by culture a very deeply felt delight, a very important part of life.

And because they have some culture and are more human, less engrossed in the marts of trade and the ways of holding-companies than most, the doctors should value highly the delights of artistic appreciation.

But as to the artistic, creative side!

In a recent talk before the Physicians Art Society here, Mr. Cyrus Dallin, noted sculptor gave an unusual rendering of his theme as to this:

A Westerner raised in Indian contacts a man of the broad prairie, despite his many years of the studio, Dallin is still the outdoor man sensitized to the mystery of the world, steeped in the mysticism often half articulate only of the man close to nature

To him the artist's insight is a gift, his high moment a brief contact with the universal consciousness, of vivid vision which he then endeavors to record, as best he may for others.

The thought, not new is psychologically very close to the line.

And only those who have not only the sense of beauty but the capacity for reverence for the great unseen forces are really in the best sense—artists.

And coming closer to technical matters Dallin stressed vividly what is so often overlooked, namely that in sculpture and in painting the lack that makes expression fail so often is a curious lack—curiously common—the trick of seeing the world in two dimensions only.

Sheer "diaper" design murals and wall paper things may be handled in one plane two dimensions only.

But the world about us is three dimensions, inevitably.

And to far too many the third dimension means so little!

Dallin says that educating this queer blindness out of art students is a major part of his teaching job.

In his direct phrase he says, I can't teach them to draw or model, all I can do is to teach them to see.

Now oddly enough, this lack of seeing is the blind side of so many medical men!

And of surgical aspirants, so much and much the more.

The man who sees his anatomy like that of the unfolding flat leaves of one of those weird great charts one sees in some offices—who cannot with out real effort visualize the position of the appendix or the common gall duct without charts, measurements or surface landmarks — this man is under handicap.

It has been proposed that there be in the medical school curriculum some instruction in drawing.

It might seem that we should expect highly educated young men to be able to express themselves with the pencil as well as with the pen, but, save for rare exceptions, they are not. The indicated instruction must necessarily be cramped as to time but it needs but little time to show a keen man what the third dimension means, to have him understand that a drawing is the representation of whatever may be in front of him, reduced from three dimensions to two, to give him some clear idea of perspective (not exact mechanical perspective) and to put him in position to draw what he sees or what he wishes to tell, with such skill of hand as God gave him or practice can help him develop. It is too common to suppose that only those particularly gifted can draw. This is pure nonsense. Anyone can learn to draw though it comes very much easier to those who like to draw probably in many cases those to whom translation from three planes to two is as instinctive as it was to some of our plains Indians or to the cave men of the Cromagnon.

We are not speaking here of artistry of high grade,

but of learning to express graphically what one sees, or what one would like to show

Years ago one Dr Larned wrote of "graphics" as opposed to the artists' use of line and color, and the distinction is fair enough, the phrase good. What it may be well to consider is the imparting to medical students of a skill of expression in drawing comparable to such knowledge of the English language as may make difficult communication with one's fellow men a bit easier

It is suggested that every medical student be taught to draw. He is now required to make microscopic two dimensional drawings. So far, well enough. But he should learn to *make pictures*, with understanding of three dimensions. No one expects great artistry.

But, if the student learns a bit of this, he cannot only do his own illustrations—authentically—but he gains, with every drawing, in his knowledge of the visible world and of that part of it which is his pasture—the human body.

Here in Boston we have had a few men who have worked this out to their no slight advantage. Dr William Rimmer, Dr George H. Monks, Dr William P. Graves, Dr Harris Mosher and the writer.

And Dr Robert L. Dickinson of Brooklyn and New York has done better work and learned more thereby than any of us.

To all of us the ability to set down in black and white what we have to tell of what we have seen, what we have conspired and contrived to do, is of importance—of great importance to us.

With skill to do this small thing we are freed from thralldom to the professional draughtsman, who can everlasting draw, but doesn't know what it is about.

We are in command of our own means of expression.

And later may come to the doctor further study, further practice growing out of this beginning and some sort of creative work for its own sake, and for the sake of joy of building and doing.

And so we come back to our beginning and question, partly answered, of the reasons for the physician's interest in art.

Very truly yours,  
FREDERIC J. COTTON, M.D.

#### THE CANCER PROBLEM

Editor, *New England Journal of Medicine*,

Cancer is becoming day after day the problem of civilization itself. We can say safely that this malignant disease removes from humanity hundreds of thousands every year. It has been said on authoritative sources, that one woman out of seven and one man out of eleven above the age of thirty-five are victims of this disease. The whole scientific and medical world is in search for more light on the subject of cancer, and endeavors to discover more and more knowledge of its etiology, course, signs and treatment.

After years of study at home and abroad, and painstaking research work, William Seaman Bainbridge, A.M., M.D., C.M., LL.D., a well known sur-

geon in New York City, had his book "The Cancer Problem" published in 1914. Since then the book has been brought up to date and translated from English into French, Spanish, Italian and Polish. The author, whom I have the pleasure to know well, was kind enough to send me a copy of the book in French in 1932, and now I have just finished reading the Arabic edition.

As one of many Arabic speaking physicians in this country, coming from the Near East, and conscious of the fact of what the East contributed to the West in medicine and science, and what the Arabs particularly contributed to the medical world, I can not but express my gratitude and satisfaction not only to Dr Bainbridge, and my congratulations to him on this his beautiful work, but to Joseph A. Hitti, M.D., and Shakir K. Nassar, B.A., both of Beyrouth, Syria, who did the translation into the Arabic language. In this edition the author has added his latest information and discoveries on the subject. The Arabic edition, a book of 219 pages, printed on beautiful paper in the American Press of Beyrouth, is dedicated, and for good reason, to no less a man than that great benefactor and humanitarian, George E. Post, the famous surgeon who for forty two years taught surgery in the American University of Beyrouth, and who, by the way, was a good friend of the author. And in this Arabic edition, my distinguished friend, Philip K. Hitti, Ph.D., of Princeton University, wrote a very interesting chapter on the history of Arab medicine. I have no doubt that this work on cancer, the first of its kind in the Arabic language, will be both beneficial and interesting to the Arabic speaking world. As a physician, I can only say that this is one of the most complete works on cancer I have ever read.

RASHID TAKY DEEN, M.D.  
811 Walton Avenue,  
Bronx, New York City

#### COMMITTEE ON PUBLIC RELATIONS OF THE MASSACHUSETTS MEDICAL SOCIETY

March 18, 1935

Editor, *New England Journal of Medicine*,

I notice in the *Journal* received this morning, on page 490, an announcement, "Sub-Committees of the Committee on Public Relations." For over a month, I have been trying to find out who are the members of the Committee on Public Relations. Dr Blakely informed me that the names of the Committee are in the Medical Journal—but not there. I have asked members here and can't find out who they are. Hence, to whom should a communication be sent for the purpose of bringing to their attention an important matter?

I would appreciate your giving me the names of the Committee. May I add, why are their names not mentioned as are the members of the other Committee on page ii of the *Journal*?

Very cordially yours,  
EDWARD H. TROWBRIDGE, M.D.  
36 Pleasant Street, Worcester, Mass.

**EDITORIAL NOTE** The Committee on Public Relations is not a Standing Committee and therefore was not included in the list presented by the Secretary for publication. The list is appended.

**MEMBERSHIP OF THE COMMITTEE ON PUBLIC RELATIONS**

- \*The President, William H. Robey Chairman
- \*Charles E. Mongan, Vice Chairman
- \*Elmer S. Bagnall, Secretary

*Adequacy of Medical Care*

- Ernest L. Hunt, Chairman  
Worcester
- Halbert G. Stetson  
Greenfield
- Patrick J. Sullivan  
Dalton

*Social Legislation and Insurance*

- Michael A. Tighe Chairman  
Lowell
- Patrick E. Gear  
Holyoke
- Walter A. Lane  
Milton
- Charles E. Mongan  
Somerville
- Halbert G. Stetson  
Greenfield

*Public Health and Practitioner*

*Public Information*

- Channing Frothingham, Chairman  
Boston
- Merrill E. Champion  
North Harwich
- William G. Curtis  
Quincy
- William F. MacKnight  
Fall River

*Hospital Relations*

- J. Harper Blaisdell Chairman  
Winchester
- Francis H. Dunbar  
Mansfield
- Channing Frothingham  
Boston
- Thomas H. McCarthy  
Brockton
- Walter A. Lane  
Milton

*Medical Education and Licensure*

- Francis H. Dunbar Chairman  
Mansfield
- Harry R. Nye  
Leominster
- Francis E. O'Brien  
Haydenville
- Harper E. Whitaker  
Gloucester

Members ex-officio of all committees.

**OFFICIAL ACTIONS OF THE BOARD  
OF REGISTRATION IN MEDICINE**

STATE HOUSE, BOSTON

**SUSPENSION OF REGISTRATIONS**

Editor *New England Journal of Medicine*

This is to inform you that at a meeting of the Board of Registration in Medicine held March 14 1935 it was voted to suspend for one month the registration of Dr Jool Ginsburg 127 Washington Street, Dorchester Massachusetts because of deceit in connection with automobile accident insurance claims.

The registration of Dr Eli Silverman was suspended for six months because of deceit in connection with automobile accident insurance cases.

Very truly yours,

STEPHEN RUSHMORE, M.D. Secretary

**RECENT DEATHS**

**BIGELOW**—George Hoyt Bigelow M.D., of Milton, Massachusetts died December 3 1934. He was born in 1890 the son of Dr E. H. Bigelow and Mrs Agnes Elizabeth (Cutter) Bigelow graduated from Harvard College in 1912 and from the Harvard Medical School in 1916. After an internship at the Massachusetts General Hospital, he joined the medical corps of the United States Army serving at the Rockefeller Institute Fort Sam Houston, base hospital at Spartanburg and overseas at Allerry. On returning to this country in 1919 he engaged in the study of trichobezia in Santo Domingo later returning to the Harvard School of Public Health, graduating therefrom in 1921. He accepted a position in Antioch College in the department of industrial medicine and later Cornell Medical College as director of the clinic.

In 1924 Dr Bigelow became Director of the Division of Communicable Diseases in the Massachusetts Department of Public Health rising to the position of Commissioner of Public Health in less than two years. In 1933 he resigned and was appointed Director of the Massachusetts General Hospital to occupy the position made vacant by the resignation of Dr F. A. Washburn.

His administration of the Department of Public Health was marked by notable contributions to sanitation and extension of service in many other ways. The Massachusetts cancer program with the hospital at Pondville will stand as one of the important contributions to progress in this Commonwealth which led to his election as President of the American Society for the Control of Cancer.

Dr Bigelow was a Fellow of the Massachusetts Medical Society the American Medical Association, and a member of many national and local societies.

Dr Bigelow is survived by his widow, Mrs. Margaret (Wesselhoof) Bigelow, two children, a daughter of sixteen and a son of fourteen years his father and mother Dr and Mrs. Enos H. Bigelow of Framingham, and two brothers.

**LILLIBRIDGE** — BYRON J LILLIBRIDGE, M.D., of Braintree, Massachusetts, a retired physician, formerly of Providence, Rhode Island, died at the home of his daughter, Miss Ethel V Lillibridge, in Miami, Florida. He was born in 1860, and graduated from the Jefferson Medical College in 1882.

He practiced for many years in Providence, Rhode Island, and was a member of the Rhode Island State Medical Society. Since retiring from practice, he had been living in Braintree, except for visits in the South.

In addition to the daughter mentioned, he is survived by another daughter, Mrs Ernest W Mann, of Braintree, and a son, Byron J Lillibridge, Jr.

ett Academy and attending the Gorham (Maine) Normal School she matriculated at the Woman's Medical College of Pennsylvania in Philadelphia, graduating therefrom in 1897. She settled in Worcester, Mass., specializing in gynecology but included general practice. She was a former member of the Worcester Board of Public Welfare and the staff of the Memorial Hospital.

She joined the Massachusetts Medical Society in 1899 and resigned in 1934. She was also a Fellow of the American Medical Association.

Dr Barrell is survived by two brothers, Dr George E Barrell, a dentist, of Boston, and William O Barrell, of York, Maine, also two sisters, Mrs Anna Blaisdell and Miss Theodosia Barrell, of York, Maine.

**MacLEOD** — PROFESSOR JOHN JAMES MACLEOD died in Aberdeen, Scotland, March 17, 1935.

Together with Sir Frederick Banting, he received the Nobel prize in medicine in 1923, for the discovery of insulin. Professor MacLeod was a member of the faculty of Western Reserve University at Cleveland from 1903 to 1918, and for the next ten years was associate dean of the University of Toronto Medical School.

Before coming to America, Professor MacLeod studied at Leipzig, and served as demonstrator in physiology at the London Hospital, later being appointed lecturer in biochemistry. He had many honorary degrees and had written important articles.

He was president of the American Physiological Society in 1922, and at the time of his death, he was Regius professor of Physiology.

**COFFIN** — JOHN LAMBERT COFFIN, M.D., of Northboro, Mass., with an office at 220 Clarendon Street, Boston, died at his home, March 14, 1935.

He was born in East Boston in 1852, a son of Abel and Julia (Holland) Coffin. He graduated from Tufts College in 1871 and from Boston University School of Medicine in 1876. He formerly practiced in Medford, Mass., and after studying dermatology in New York and Boston, specialized in diseases of the skin. His office was in Boston.

He was a member of the Massachusetts Homeopathic Society, a trustee of the Northboro Public Library, chairman of the local Red Cross organization during the World War, and trustee of the Westboro State Hospital.

Dr Coffin was professor of dermatology at the Boston University School of Medicine, later retiring with the designation of emeritus professor. For several years he was editor of the *New England Medical Gazette*. He was a Mason.

His widow, Mrs Annie W (Jones) Coffin, and two daughters, the Misses Louisa W. and Julia M Coffin, of Northboro, survive him.

**BARRELL** — MARY ELIZABETH BARRELL, M.D., of York, Maine, and formerly of Worcester, Mass., died at her home, March 14, 1935, aged 72 years. She was born in York and after graduating from Brack-

**PEARCE** — ARTHUR CUSHING PEARCE, M.D., of Brookline, with an office at 543 Boylston Street, Boston, died at the City Hospital, March 16, 1935. He was born in 1875, and graduated from the Harvard Medical School in 1903.

He joined the Massachusetts Medical Society in 1908, and was also a Fellow of the American Medical Association.

Dr Pearce was a urologist.

He is survived by his widow and two children.

**JACKSON** — JABEZ NORTH JACKSON, M.D., formerly president of the American Medical Association, died at Kansas City, March 18, 1935. He was sixty six years of age, and had been City Health Director for several years.

He occupied a prominent position in the Spanish-American War with the Second U S Army Corps, near Harrisburg, Pennsylvania.

He was associated with several hospitals as consultant, and was prominent in medical organizations in and about Kansas City.

## NOTICE

### REMOVAL

SAMUEL EDELSTEIN, M.D., announces the removal of his office to 371 Commonwealth Avenue, Boston.

## REPORTS AND NOTICES OF MEETINGS

### MEDICAL LECTURE

Doctor Christian spoke at the Peter Bent Brigham Hospital on the morning of the twenty first of February on "Valvular Heart Disease". With the exception of luetic aortic valvular disease, almost all lesions of the valves are rheumatic. In the early acute stages of rheumatic heart disease there are changes in the joints which do not permanently damage these structures, while in the heart the acute disturbance is not very important from the point of view of damage, but the lesion continues as a chronic fibrosing change and injures one or more

valves. This rheumatic infection may acutely involve only one valve but the most common type has several acute exacerbations over a number of years and involves more than one valve. Such valves often present non bacterial vegetations. The adjacent edges of the cusps of these valves tend to fuse, thus shortening the circumference of the orifice, and the free edges of the cusps become thickened and often calcified. These changes lead to regurgitation and stenosis which two conditions must go together although one usually dominates the clinical picture.

In syphilis on the other hand we get separation of the cusps at their point of attachment and a stretching of the cusps and of the tissues at the base of the valve so that it becomes insufficient. It is impossible for a syphilitic process to cause stenosis, and syphilis in contrast to rheumatic fever never involves any valve other than the aortic.

One type of rheumatic heart disease tends to progress rapidly and cause death in ten years or less, while the more chronic type leads to terminal heart failure in from twenty to fifty years. The latter type is often seen in pure rheumatic stenosis and is somewhat rarer than the first type. There may be calcification in any chronic fibrous tissue change especially in older individuals. The mitral valve, consisting of two large flaps or sails which need the co-operation of the contracting fibrous ring at the base and the chordae tendineae to prevent regurgitation is profoundly changed in the rheumatic process where there is thickening and inter-adherence of the margins of the flaps and a shortening and thickening of the chordae tendineae. The valve becomes like a funnel being gradually drawn into a typical "fish mouth" valve with only a small aperture. Lime salts are deposited in the flaps or underneath the flaps as x-ray often shows. At times x-ray shows a "U" or "C" shaped shadow and this is due to lime salts in the annulus fibrosus, especially common in chronic non valvular heart disease.

Syphilis involves the first part of the aorta more frequently than the aortic cusps, but aortitis without involvement of this valve is very difficult to diagnose because there are practically no symptoms unless there is a dilatation of the first portion of the aorta with aortic insufficiency. Occasionally however syphilis involves the coronary orifices giving anginal symptoms and rarely occlusion without involvement of the cusps. By the law of chance if a patient has an aortic lesion with a history of rheumatic fever and a diastolic murmur late in diastole the chances are that both the aortic and the mitral valves are involved and the diagnosis of an Austin Flint type of murmur is not justified while if the patient has lues the diastolic murmur suggesting mitral involvement is probably an Austin Flint murmur. Experimental evidence has lent support to the latter type of murmur since it has been produced by damaging the aortic valves of dogs.

Hemoptysis is rather common in rheumatic heart disease due to a dilatation of the pulmonary vessels

and a congestion of the lung with excessive diapedesis without the rupture of the vessels. There are also in some patients psychogenic manifestations with aura and frequently a feeling of impending danger and hallucinations before the onset of the pulmonary hemorrhage. Doctor Christian mentioned another type of pulmonary hemorrhage which tends to recur and is familial without any lesion in the heart or lungs.

Aortic stenosis is well recognized and easily diagnosed at present. It is not very rare and occurs four times as frequently in males as in females predominantly in older individuals.

Doctor Christian in speaking of the treatment of syphilitic heart disease said that modern opinion is in favor of treating these people like other luetic patients and that the early fatalities were due to large doses of arsenicals. Now that smaller doses are used there appears to be no danger in active treatment, and the pain in particular can be well controlled and a definite slowing of the progression of the disease be brought about.

Doctor Christian spoke briefly on thyroid ablation in cardiac insufficiency where we deliberately produce one disease to counterbalance another. It produces enforced rest and is only a last resort. It must be remembered that myxedema by itself produces cardiac disturbances and that the operative mortality is high. Bothersome symptoms of myxedema develop when the basal metabolic rate is below minus twenty and thyroid extract in sufficient quantities to keep the basal metabolic rate above this level must be administered. Occasionally a patient has been greatly improved by this procedure some are slightly better others are made worse. The indications for this form of therapy are limited, and Doctor Christian believes that it is more important in severe anginal pain where there is no cardiac insufficiency.

#### THE ANNUAL CONGRESS ON MEDICAL EDUCATION, HOSPITALS AND LICENSURE

The thirty first Annual Congress on Medical Education, Hospitals and Licensure was held in the Palmer House Chicago on February 18 and 19 1935 with an increased attendance over that of last year although the Association of American Medical Colleges has now for over ten years held its annual meeting at a time and place other than that of the Congress. The Association was as always, well represented at the Congress also. The keynote of these meetings is "progress" after a review of the past and frank self-criticism of the present situation. Complacency and self-satisfaction occasionally raise their heads but in the recent discussions the urgency and seriousness of the problems of to-day were not detected. An important qualification of progress should be made. It is progress with co-operation and by co-operation.

Perhaps the most significant address was that of Dr Ray Lyman Wilbur who as chairman of the Council on Medical Education and Hospitals pre-

sented a report for the Council. The importance of periodic surveys of medical schools has been generally realized, and such a resurvey is now in the making, under the auspices of the Council, the Association of American Medical Colleges and the Federation of State Boards. Already about thirty schools have been visited and it is expected that within a year the survey will be completed and the detailed report will be presented. The procedure for the study is noteworthy. A comprehensive questionnaire is sent to the school about a month before the expected visit so that certain information is made easily available at the time of the personal visit. Then, too, all medical schools whether or not recognized as such by the Council will be invited to participate and will be surveyed if they desire. The visit is made always by two persons, the official visitor, and another, who may be a representative of the Council, the Association, or the Federation.

On the basis of very incomplete returns (less than half of the schools), it may be said that in the first place considerable "obsolescence" has been detected. It is impossible for institutions generally to take advantage quickly of the new when changes are as rapid as they have been in the past twenty-five years, but one gets the impression that the lag has been unjustifiably great. Certain weaknesses are clear in some schools: too many students for the capacity, and serious weakness or inadequacy in the teaching of psychiatry, public health and obstetrics. Nevertheless, contrasting the situation with that of twenty-five years ago, there is marked strength in the basic sciences and in the main clinical departments (except obstetrics).

There has been a growth of specialism, with some abuses, and the development of special examining boards for control. One danger here is that these special boards become "shut out" organizations. The reasonable control of specialism is a problem awaiting solution.

It is alleged that there are too many professional students. This was discussed by Raymond Walters, President of the University of Cincinnati, who referred to statistics indicating that apparently there are too many students in law, engineering, teaching and medicine. Control has been sought in several ways, of arbitrary quantitative standards, on the basis of the number some one thinks the community ought to need. President Walters disapproved. Since the main public interest is in how the medical service is rendered rather than how many physicians there actually are in the community, he pointed out the probable better solution by emphasis on quality of service; quantity of physicians is a secondary consideration. Medicine still remains primarily an individualization of service in which the expertness, the character and the vital personality of the physician are essential elements. While this does not offer an easy solution for the problem of alleged overcrowding, it is an intelligent approach to the fundamental justification for any regulation "the greatest good to the greatest number."

In contrast with the consideration of controversial questions was the address on the History of Medical Licensure by Henry E. Sigerist, Director of the Institute of the History of Medicine, Johns Hopkins University. It was a scholarly reminder of the well known adage, "How old the new."

Tuberculosis Institutional and Educational Aspects was the focus of attention for one afternoon session. The astonishing gross results in diminution of the incidence and mortality of this disease are to be contrasted with what remains to be done in dealing with the "White Plague." In order to eliminate the disease, much remains to be learned of its natural history, also there is available much information widely neglected. Tuberculosis is one of the diseases of which it has been said "to know this is to know medicine." The part that the careful and thorough study of tuberculosis as a systemic disease with local manifestations, and surgical and non surgical methods of therapy, may play in the teaching of undergraduate medical students, was set forth in masterly fashion by James A. Miller, Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York.

One of the questions discussed, urgent in some communities, concerns the status of the radiologist, the pathologist and the anesthetist in regard to license to practice medicine. The wording of the topic set for discussion was unfortunate and led to some misunderstanding. Should the radiologist, the pathologist and anesthetist be licensed to practice medicine? The question at issue is rather should the practice of radiology, pathology and anesthesia be limited to physicians licensed to practice medicine? To this question, if unqualified, there can be but one answer—Yes. But it was noted that while practice in these fields is the practice of medicine, there may be employed many technical processes, the use of which may not involve the judgment of the physician. It is the exercise of the judgment of the physician which cannot be delegated. Opinion was divided as to the necessity or expediency of licensing the required technical assistants. Whether licensed or not the tendency is for some of them to withdraw from connection with licensed physicians and to open their own offices or associate themselves with commercial enterprises and carry on in the new relation actual practice of medicine. Possibly this tendency could be checked more satisfactorily if technical assistants were licensed. In no case, however, could the responsibility of the physician to employ competent assistants be impaired. It was pointed out also that if legislation should be sought, there should be compiled information to provide the necessary basis of fact, not mere opinion, showing that there exists a situation demanding remedial legislation for the protection of the public. One justification for the employment of technical assistants, namely, that there are not enough physicians who are competent pathologists, radiologists and anesthetists should be called to the attention of those persons who complain that there are now too many physicians. This

contradiction indicates that not all the factors involved have been brought out into the daylight.

There was a spirited discussion of osteopathy stimulated by the synopsis of a report of a survey of some osteopathic schools in the United States made by Dr Frederick Etherington of Queen's University Kingston and Dr Ryerson of the University of Toronto on behalf of the Province of Ontario when osteopathic physicians had asked for extension of privileges. It was pointed out that the theory of osteopathy and the theory of scientific medicine are incompatible that no experimental evidence to support the theory of osteopathy had ever been submitted and that whatever benefit patients may receive from the ministrations of osteopathic physicians it is not from osteopathy if this term has any specific meaning. The survey indicated that the equipment, clinical facilities and instruction were of a grade distinctly below that of good schools of medicine. The characterizations were rather caustic and stimulated replies by osteopathic physicians, who submitted little evidence on the question at issue. It is to be hoped that the schools of osteopathy in this country will accept the opportunity for such a study as the Council now offers to schools of medicine which it has hitherto failed to recognize.

At the annual dinner of the Federation of State Boards Dr Sigerist gave a delightful informal talk on Sideights on the Practice of Medicine. He referred chiefly to the writings of Henri de Mondeville, which indicated that however much the science and art of surgery have changed human nature was just about the same these hundreds of years ago as it is now.

#### NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

A meeting of the New England Ophthalmological Society was held at the Massachusetts Eye and Ear Infirmary on the nineteenth of February. Dr James J Regan, the president, presided. The first case was presented by Dr David Cogan and was that of a nine year old boy with marked head tilting since infancy. This was caused by a congenital paresis of the left superior rectus muscle. If the head was forced to the erect position, the right eye deviated fifteen degrees upward and the patient used his paretic eye for fixation. The reason for this has been said to be that the visual acuity may be greater in the paretic eye or that this eye is dominant, or that the separation of images is greater and the diplopia less annoying if the paretic eye is used. The last explanation is probably the most common reason for fixing with the paretic eye. When the patient looked to the left there was a marked apparent overaction of the inferior oblique on the right side.

The second case presented by Dr Charles Walker was a seventy year old man who had had difficulty with his eyes since childhood. He had a sensation of the presence of a foreign body in the left eye and on examination elevated deposits of calcium were

found on the bulbar conjunctiva. This diagnosis was confirmed pathologically and an attempt was made with some success to remove these deposits by using twenty per cent neutral ammonium tartrate.

The third case presented by Dr Roger Irvine was that of a fourteen year old boy who entered with a squint which he had had since five years of age. After an operation on the muscles there was some improvement, but there is still a deviation of ten degrees in the left eye when he fixes with the right. Doctor Lowell spoke briefly of a new method of operating for such strabismus in which the central part of the muscle fibers are cut near the eyeball while the ones near the edge are cut farther back thus leaving an attachment to hold the eye in place.

Dr James Watson White presented the paper of the evening on The Diagnosis and Treatment of Vertical Strabismus. The superior rectus is most commonly affected and since the primary deviation is much less than the secondary deviation, the patient tends to fix with his paretic eye although twenty-five per cent of the cases fix with the non-paretic eye. Several slides were shown to demonstrate the relations of the different muscles. There are three uses of the superior rectus: elevation, intorsion and adduction. If the muscle can be proved defective in elevation the other functions are also at fault. The superior rectus and the inferior oblique function in the temporal field while the inferior rectus and the superior oblique function in the corresponding nasal field. Hyperphoria is found by looking to one side and then upwards and downwards to see where the deviation is greatest, and it is the corresponding muscle which is at fault. Primary overactions are very rare and cases of strabismus are usually due to a secondary contracture of the direct opponent or to a secondary deviation.

Doctor White then took up examples of numerous types of cases to illustrate the diagnosis in each. A frequent type of case with many symptoms has a slight weakness of both inferior recti. Hero diplopia are common and very annoying as they change from one side to the other. Prism may give relief. An example of convergent squint with double hyperphoria was given and many other cases with different degree of hyperphoria. Many of these patients tilt their heads in order to bring the eyes on the same level and get binocular vision. The secondary contracture may be sufficient to require operation. The question of whether the rectus or oblique is at fault always arises and it is sometimes difficult to decide. We should always assume that there is a paralysed and operate accordingly and wait several months before a secondary operation is done on the other eye for contracture when this is necessary. Sometimes a double inferior oblique tenotomy is needed and paralyses of the inferior oblique are not very rare either single or double. In stenographers and seamstresses a paralysis of the inferior recti is fairly common.

The meeting was closed with a vote of thanks to Dr White.

with measurable characteristics of these groups, especially physical development and health, cultural and intellectual background and the variations in its development among groups classified by occupation or social status. A further section has to do with the influence of differential reproduction on the characteristics of the American people, and finally, in Part IV, the authors consider the causes and control of population trends. The work is illustrated by many charts and tables, there is an unusually full bibliography and a good index.

The reviewer feels that this will become a standard work on the problems discussed, many of which have interrelations with medicine. The ultimate worth of this publication will depend upon the effect which it has on attempts to control human destiny. Here are the facts as we know them to-day. It seems evident, according to the authors, that "the social conditions which affect reproduction might be modified in a number of ways, so that the dynamic influences of population change would be more in line with conscious social objectives. Eventually, if our dream of human progress is to be realized, rational social action must replace the operation of blind forces in this as in other fields. In the furtherance of this ideal there is need both for more exact science and for a larger appreciation of the possibilities and values of human life."

**Manual of Clinical Laboratory Methods** Pauline S. Dimmitt. 156 pp. Illustrated. Philadelphia F. A. Davis Company \$2.00

This is another laboratory manual which duplicates the subjects covered by scores of other manuals already on the market. It is written primarily for the laboratory technician and does not include procedures which are done outside of the laboratory. The illustrations are all borrowed from other text books, but are quite well reproduced. The print is clear and the paper of good quality. There are certain tests which might have been described, but, unfortunately, were not, such as red cell volume, hematocrit, basal metabolic rate, etc. The book should provide a useful complement to other standard works.

**To Remind** A biological essay The Abraham Flexner Lectures Series Number Two Sir William Bate Hardy 45 pp Baltimore The Williams & Wilkins Company

At the time of his death early this year, Sir William was preparing for publication his complete Abraham Flexner Lectures as given at Vanderbilt University in 1931. But only two were finished and we have these in a delightful historical summary entitled "To Remind."

The main thesis of these lectures is a historical consideration of dissymmetry in molecular structure. This physical quality is one possessed only by compounds arising in the animate world. True, the chemist can make racemic mixtures in his laboratory

from which he can isolate dextro- and laevo-rotatory components, but plants and animals possess the capability of producing one or another of these in pure form. That organisms are sensitive to differences in the optical rotation is evidenced by such facts as that left-handed adrenaline has thirteen times the physiological efficiency of the right-handed variety.

Sir William does not attempt to explain life on the basis of this important principle championed by Pasteur, but he presents some interesting speculations about life in the light of these observations.

**Tuberculosis of the Lymphatic System** Richard H. Miller 248 pp. New York The Macmillan Company \$4.00

In this comprehensive treatise on tuberculosis of the lymphatic system, Dr. Miller summarizes the many years of experience of the clinical group at the Massachusetts General Hospital, of which he is the head, and in addition, in the earlier chapters, presents an interesting sketch of the history of scrofula,—the King's Evil,—and the various steps by which science and sanitation have transformed it from a well nigh universal affliction to the comparatively unimportant place it now occupies in human morbidity. The facts of the bacteriology, pathology, pathogenesis and immunology of the disease are ably summarized from the literature, and the gross anatomy of the lymphatic system is well described and illustrated. An interesting discussion concerns the possibility that the common bovine form entering the system through tonsils, adenoids and the lower alimentary tract and localizing in the tributary lymph nodes may confer immunity to the widespread dissemination of this form of the disease and more especially to the later inoculation of the human organism. While admitting the probability of some such immunity, the author states that "In case of a child with tuberculosis of the glands of the neck, we should regard the condition as one having inherent grave possibilities of spreading infection, rather than one in which the patient has acquired a condition which confers a beneficent resistance."

The most useful and unique part of the treatise are the last chapters, where Dr. Miller, basing his views on 536 carefully studied cases, describes concretely the principles and methods which have a place in therapeutics, including general hygienic measures, removal of tonsils and adenoids, sanatorium treatment, heliotherapy, ultraviolet rays, roentgen rays, radium, tuberculin and radical surgery. He believes that the latter is more frequently indicated than is the present custom and that the surgeon need not fear that his manipulation will disseminate the disease.

It is the irony of Fate that this admirable monograph is rendered possible by advances in the science and art of medicine, just when the sister science of sanitation has reduced so vastly the incidence of the disease of which it treats.

